A mixed methods study of preterm births in Bangladesh, Ethiopia, and Mali

An investigation of individual, household, and community-level factors that influence risk factors for and experiences of preterm birth in three settings

Johns Hopkins Center for Communication Programs

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List of acronyms

ANC	Antenatal care
BOT	*Born on Time*
CEFM	Child, Early and Forced Marriage
CCP	Johns Hopkins Center for Communication Programs
CSL	Country study lead
DHS	Demographic and Health Survey
GBV	Gender-based violence
IDI	In-depth interview
IPTP	Intermittent preventive treatment in pregnancy
IPV	Intimate partner violence
ITN	Insecticide treated net
KII	Key informant interview
LBW	Low birth weight
LINC factors	Lifestyle, infection, nutrition, and contraception-related factors
MNCH	Maternal, neonatal, and child health
NNM	Neonatal mortality
Plan	Plan International Canada
PPROM	Premature, preterm rupture of the membranes
PTB	Preterm birth
RTI	Reproductive tract infection
SBC	Social and behavior change
SDG	Sustainable Development Goals
SBCC	Social and behavior change communication
SEM	Socio-ecological model
TBA	Traditional birth attendant
RTI	Reproductive tract infections
SCC	Save the Children Canada
UTI	Urinary tract infections
WVC	World Vision Canada

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Chapter One: Introduction

Preterm birth (PTB) is the leading cause globally of neonatal, infant and under five mortality (Frey & Klebanoff, 2016; Lehtonen, Gimeno, Parra-Llorca, & Vento, 2017; Passini Jr et al., 2014; Vogel et al., 2018). Preterm births constitute 75% of early neonatal mortality (0-7 days) and PTB has been a challenge for prevention initiatives. Globally, the burden of preterm births is primarily in Sub-Saharan Africa and South Asia, with 90% of preterm births occurring in low and middle income countries (Walani, 2020). According to 2010 data, 15 million preterm births occur every year, of which 60% are in Sub Saharan Africa and South Asia (Blencowe et al., 2012). A recent paper calculated that to reduce neonatal mortality (NNM) to meet the Sustainable Development Goals (SDG), a greater reduction in NNM will be required. They estimate that about 1.8 million neonates will die in 2030 if the rate of NNM reduction remains at its current pace (Chawanpaiboon et al., 2018).

Preterm births are live births delivered prior to 37 weeks of gestation (Shah et al., 2014). More than half of preterm births are low birth weight (<2500g), leaving newborns at risk of both subsequent morbidity and mortality (Lawn, Gravett, Nunes, Rubens, & Stanton, 2010). Preterm birth is the main factor implicated in neonatal mortality (Goldenberg, Culhane, Iams, & Romero, 2008). While many of the causes of preterm births are rooted in maternal nutrition and health (Bloomfield, 2011), there exist few evidence-based intervention models demonstrating a reduction in preterm births.

The Born on Time Project

In response, World Vision Canada—in conjunction with Plan International Canada and Save the Children Canada— identified three countries with high rates of preterm birth: Bangladesh, Ethiopia, and Mali. The consortium has been implementing the *Born on Time* (BOT) project in these three countries since 2016. Together, these three countries contribute approximately 847,000 preterm deaths annually, and BOT uses social and behavior change communication (SBCC) approaches, in addition to health system strengthening measures, to address key risk factors associated with PTB in an effort to impact subsequent neonatal mortality.

Preterm births in Bangladesh, Ethiopia, and Mali

A report published in 2018 estimated that in 2014, Bangladesh had the highest national PTB rate at 19.1% (Chawanpaiboon et al., 2018). A study that took place in rural Bangladesh determined that preterm babies accounted for 46% of all neonatal deaths among that study cohort (A H Baqui et al., 2013). In Ethiopia, it was estimated that 10-15% of live births in Ethiopia were PTB, but other regional estimates varied (Blencowe et al., 2012). Among all births in Gondar University Hospital in Northwest Ethiopia, 14.3% of adverse birth outcomes were recorded as preterm (Adane, Ayele, Ararsa, Bitew, & Zeleke, 2014). A 2018 study estimated that Ethiopia was among the top ten countries with the highest number of PTBs, with a national PTB estimate of around 12% (Chawanpaiboon et al., 2018). Finally, in Mali, direct estimates of PTB prevalence do not exist or are not readily available. A 2018 analysis that estimated regional PTB in 2014 suggested that Mali's PTB prevalence was between 10 and 14% (Chawanpaiboon et al., 2018).

Purpose of this study

Preterm birth literature often draws on hospital-based studies, most frequently conducted in high-income countries. For a long time, the spotlight of research was on clinical conditions and their impact on PTB. These hospital-based studies provide invaluable clinical data related to the proximate determinants of preterm birth including maternal, fetal and placental conditions (Chen et al., 2019). However, scant research exists on how home births contribute to preterm births, subsequent mortality, and the consequences of preterm births at home. As PTB has become one of the major causes of perinatal and neonatal mortality globally, researchers are now exploring factors associated with prevention of PTB (Flood & Malone, 2012; Simmons, Rubens, Darmstadt, & Gravett, 2010).

Early efforts to gather evidence to prevent PTB started with the 2012 global report on preterm birth "Born too Soon" (World Health Organization, 2012). The current study extends this early work using a mixed methods, multi-phased approach. The BOT study described here included two parts: Part A and Part B. Using qualitative methods, the purpose of Part A was to gather a contextual understanding of the "lived experiences" of women experiencing preterm births in the communities across Bangladesh, Ethiopia, and Mali (Johns Hopkins Center for Communication Programs, 2020). Part A also explored the role of social, household, and discriminatory gender norms as distal factors associated with risk factors for, and experiences of, PTB (Johns Hopkins Center for Communication Programs, 2020).

Building on findings from Part A, the current report (henceforth Part B) focuses on the results of Part B, including both data gathered from community-based surveys of PTB in Bangladesh, Ethiopia and Mali and a small qualitative component that examined the implementation processes of the BOT interventions in these three focal countries. Part B focused in particular on the intermediate and distal factors that influence preterm birth and are linked to dynamics in the household and community. The findings from Part B, presented here, are intended to strengthen the evidence to aid in the design of future PTB prevention programs.

Given the various dimensions of PTB explored in this study, the following section provides some background on the existing evidence around risk factors for and prevention of PTB. The literature on risk factors is organized into proximate, intermediate, and distal factors associated with PTB (Shah et al., 2014).

Risk factors for PTB

Prevention approaches hinge on identification of significant risk factors[1] associated with PTB. Currently, the literature lacks a broad spectrum of risk factors for PTB, as most research has been conducted in high-income or hospital settings (Rubens et al., 2014).

Causes of preterm birth are multidimensional with a wide spectrum of risk factors. Some of the causes of PTB are unknown. The challenge is to unpack the complexity of PTB by charting the individual determinants for each of the risk factors. Shah used a framework of proximate, intermediate, and distal PTB risk factors in their community-based study of preterm births in Bangladesh (Shah et al., 2014). Shah et al. (2014)'s study focused primarily on the proximate and intermediate risk factors of PTB. The only distal factors considered in the study were socio-economic status and education. The BOT study builds on this work and

[1] A risk factor is defined as any attribute, characteristic, or exposure of an individual that increases the likelihood of developing a disease or injury.

furthers the exploration of distal risk factors (Table 1.1) as part of its objective to inform future evidence-based prevention strategies for PTB. As a result, the current report has integrated Shah et al. (2014)'s analytical approach using the categorization of proximate, intermediate, and distal risk factors to organize our analysis and interpretation of findings.

The operational definitions of proximate, intermediate, and distal risk factors of PTB are:

1. **Proximate risk factors**: Proximate risk factors for preterm birth are the immediate factors that trigger early labor. These are often more clinical in nature and are linked to factors such as the endometrium, cervix length, rupture of membranes, etc.
2. **Intermediate risk factors**: Intermediate risk factors are slightly further away than the proximate risk factors. These include factors within the health system such as quality of ANC care or birth preparedness. These also include conditions such as anemia, shorter birth intervals, etc.
3. **Distal risk factors**: These risk factors are furthest removed in term of time and often occur within households and larger communities. These factors are determined by society and have a strong influence on women's workload, gender discrimination, social norms, household power dynamics, etc. These risk factors may also precede the pregnancy (Bloomfield, 2011).

Table 1.1 presents proximal, intermediate and distal risk factors. However, the focus of this study is on intermediary and distal risk factors of PTB.

Proximate risk factors

The proximate risk factors of PTB are related primarily to spontaneous preterm labor, which can be caused by inflammation, infection, vascular issues, among other causes (Ibrahim et al., 2016; Muñoz-Pérez et al., 2019; Nadeau, Subramaniam, & Andrews, 2016). Other proximate determinants include pre-eclampsia or eclampsia (Goldenberg et al., 2008). Another major proximate determinant is preterm premature rupture of the membranes (PPROM) that then triggers the preterm birth (Mekonen, Yismaw, Nigussie, & Ambaw, 2019) (Table 1.1). Short cervical length and birth complications are also considered proximal risk factors for PTB.

Intermediate risk factors

Intermediate risk factors differ from proximal factors in that they are slightly further removed in terms of a time frame from the actual preterm delivery process. Table 1.1 describes various intermediate risk factors. These include low BMI and poor nutritional status, including both nutrition during and before pregnancy (Chen et al., 2019). Anemia is also implicated as a key risk factor for PTB (Rahman et al., 2016). Substance use such as smoking and alcohol, and exposure to toxic chemicals are also implicated in preterm birth (Mello & Hovick, 2016; Patra et al., 2011; Siddika et al., 2019; Soneji & Beltrán-Sánchez, 2019).

Another intermediate factor for preterm birth is short birth intervals between two pregnancies. This can be easily avoided by the use of modern contraceptives (Abdullah H Baqui et al., 2018; Brown, Ahmed, Roche, Sonneveldt, & Darmstadt, 2015). Maternal morbidity, reproductive tract infections (RTIs), urinary tract infections (UTIs) and anemia are another set of intermediate risk factors for preterm birth that occur during the pregnancy (Lyndon et al., 2019; Maitra, Degraft-Johnson, Singh, & Tsui, 2001; Nsereko et al., 2020). In addition, increased evidence exists on the relationship between maternal stress and PTB (Austin & Leader, 2000; Gravett, Rubens, & Nunes, 2010).

Distal risk factors

Few distal factors have been studied in the context of PTB. Socio-economic status or vulnerability has been shown to be a risk factor for PTB, with women from lower socio-economic backgrounds more likely to have PTBs than those from more privileged backgrounds (Beck et al., 2010). The main contribution of the present BOT study lies in the area of distal factors of PTB. The list of distal factors explored by our study is included in Table 1.1.

We consider these risk factors as distal for two reasons:

1) They occur further back in time compared with intermediate risk factors, usually in the pre-pregnancy period;
2) They occur at the household, community, and societal levels. While literature on the prevention of PTB focuses more on the proximate risk factors, we argue that primary prevention can occur if distal risk factors are tackled.

As the focus of this study is on intermediate and distal risk factors, we explored risk factors at the societal and community levels (e.g. social norms or discriminatory gender norms) and at the household level (e.g. couple communication, decision-making, socio-economic vulnerability, household environment, etc.). Part A analysis suggested an intrinsic link between discriminatory gender norms and practices with respect to how families and household function and interact, having clear manifestations in women's daily lives and, ultimately, their health outcomes over time.

Table 1.1. Proximate, intermediate and distal risk factors of preterm birth

Proximate	**Intermediate**	**Distal**
Spontaneous preterm labor	Low BMI/Poor nutritional status	Discriminatory gender norms • Violence • Sexual relationships • Reproductive health • Household responsibilities (domestic chores and daily life)
Inflammation	Short inter pregnancy interval	Excessive workload during pregnancy
Infection	< 4 ANC check-ups	Social norms related to key health behaviors
Vascular disease	Place of delivery	Couple communication and decision-making
Premature preterm rupture of the membranes (PPROM)	Maternal morbidity with chronic illnesses such as HIV, hypertension, diabetes	Early age at marriage
Short cervical length	Reproductive Tract Infections	Food insecurity during pregnancy
	Pre-eclampsia or eclampsia Anemia	Early marriage, adolescent pregnancy
Birth complications	Maternal stress	Household environment where there is a strict and tension filled environment or a supportive and compassionate environment.
Chronic conditions	Pre-pregnancy nutritional status	Socio-economic vulnerability
Pathologic Uterine Distension Ischemia Decidual Hemorrhage Activation of Maternal/Fetal HPA Axis	Substance abuse (alcohol, drugs) Exposure to indoor pollution	Other context-specific cultural practices including: • Fasting during pregnancy (Ethiopia); • Brewing local alcohol during pregnancy (Ethiopia); • Belief that PTB occurs if mobility restrictions are violated by pregnant women (Bangladesh); • Stigma surrounding PTB (Mali).

Figure 1.1 shows the proximate risk factors of PTB and pathways through which they are manifested.

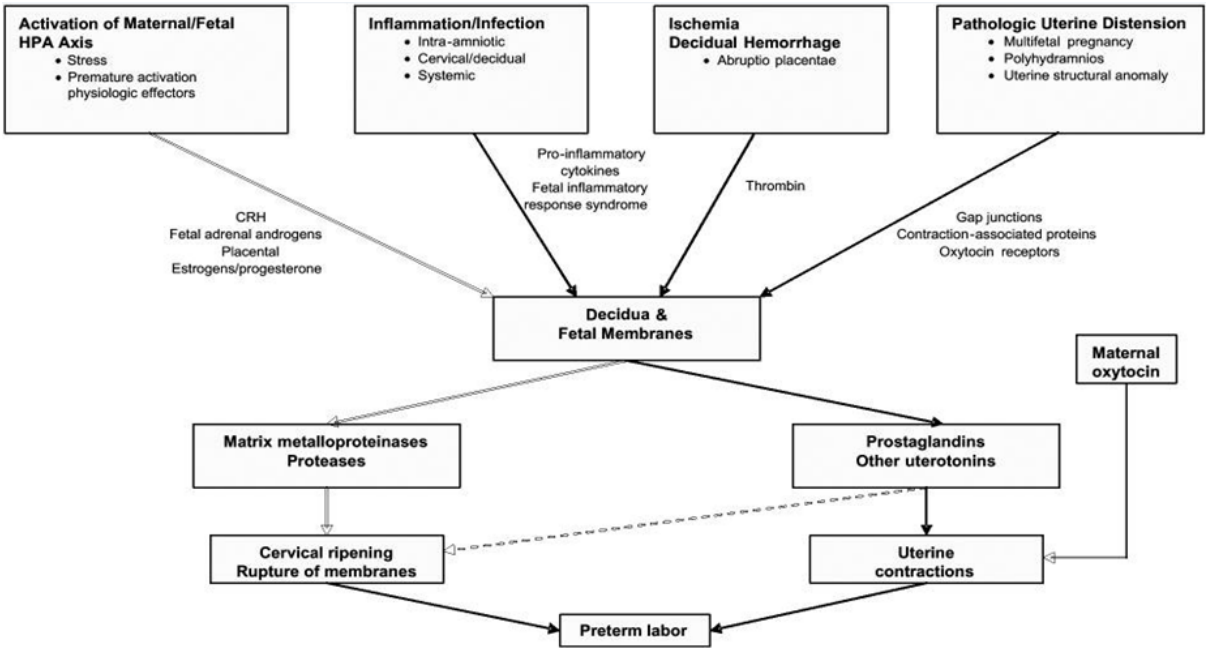

Figure 1.1. Overview of commonly occurring pathways to preterm birth from Behrman and Butler (2007) (Behrman & Institute of Medicine, 2007, p. 178).

Framework for the prevention of PTB

To organize the analyses conducted as part of this study, we propose a prevention framework for PTB to guide our analysis of distal risk factors and their relationship with key risk factors and PTB.

The prevention framework (Figure 1.2) provide a blueprint for analyses conducted as part of this study. The framework charts empirical pathways connecting distal risk factors with key health behaviors related to preterm birth. The risk factors will have direct and indirect associations with PTB. This study offers an opportunity to examine these pathways in three different settings, thereby building evidence for which there are the common factors across the three countries and at the same time those context-specific determinants that influence individuals' health and well-being in each setting.

At the end of the analysis, this study aims to suggest potential components of a holistic prevention strategy that tackles the multiple causes of preterm birth. A review of the literature indicates that the preterm birth field lacks evidence and approaches to address some core aspects of PTB prevention. If distal factors are tackled, the proximate factors that place a mother and child at risk of mortality can be prevented with long-term implications for their health and well-being over time.

The framework outlines 12 risk factors for PTB and key distal factors at household, community, and societal levels that influence, through multiple pathways, these risk factors and, ultimately, PTB. These factors include discriminatory gender norms and practices, social norms, household environment, household power dynamics, couple communication, and decision-making. Access to health services is also an important distal factor influencing risk factors for PTB. Since a prevention strategy will require an approach that addresses distal

factors, we will use these models to guide which distal factors to prioritize in a PTB prevention program. The overall analysis of the household surveys will provide direction on how to motivate different audiences such as women of reproductive age, their partner/husbands and unmarried adolescents to adopt preventive behaviors.

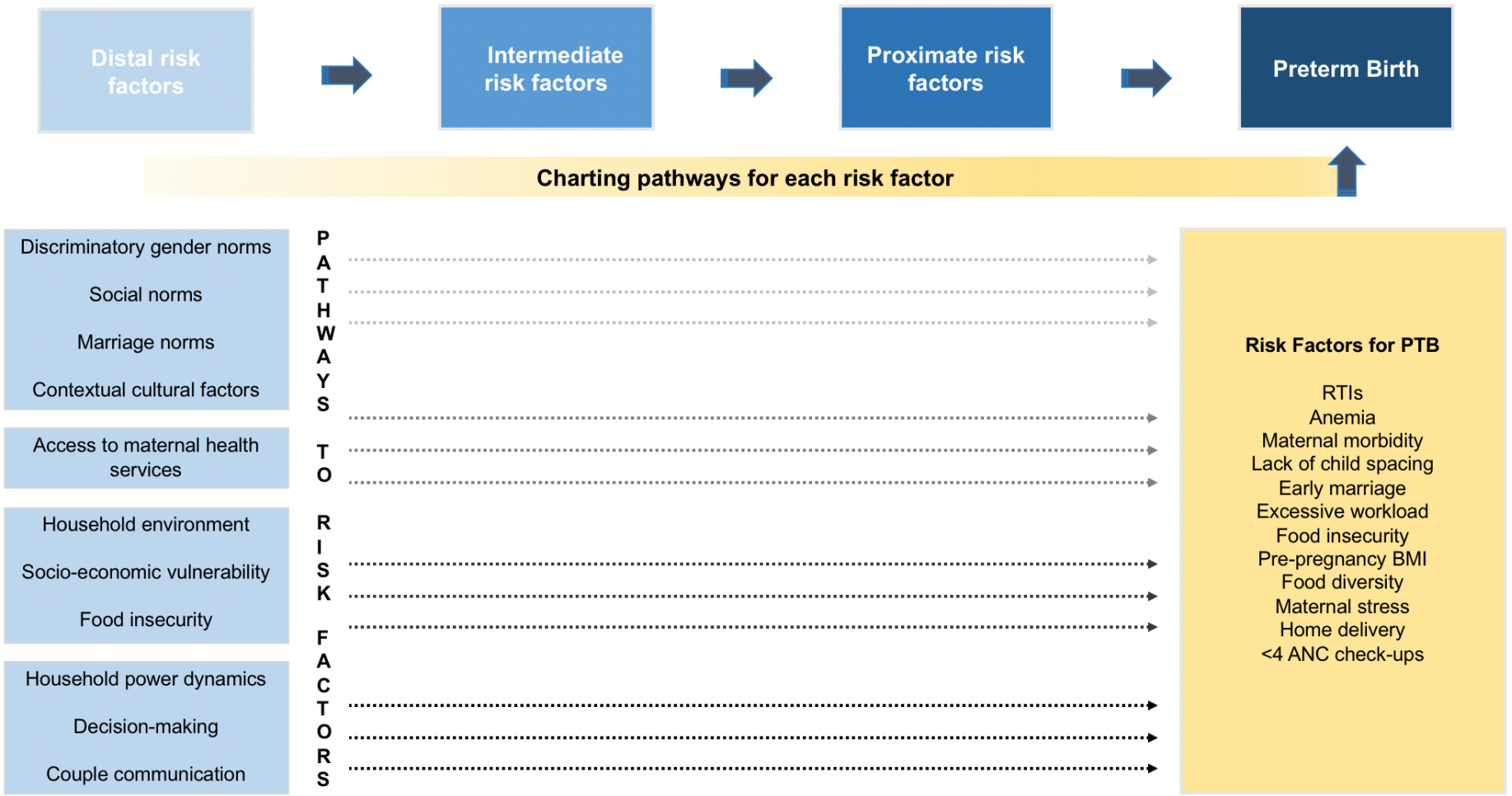

Figure 1.2. Preventive framework for PTB.

Chapter Two: Methodology

This mixed methods study used both quantitative and qualitative data collection methods to contribute to the global knowledge base on prevention of preterm birth and promising SBCC implementation approaches. The study included two strands of data collection: Strand #1 (qualitative) and Strand #2 (quantitative). In this chapter, we outline the overarching methods for both Strand #1 and Strand #2.

Using qualitative data collection methods, the objectives of Strand #1 were to:

1. Explore implementers' perspectives on barriers to and facilitators of successful program implementation
2. Assess program fidelity, or the extent to which BOT activities are delivered as intended

Concurrently, the objectives of Strand #2 were to:

1. Examine exposure to SBCC activities among priority populations
2. Describe risk factors and health behaviors associated with PTB (e.g. unhealthy lifestyles, maternal infections, inadequate nutrition, and low contraceptive use).
3. Informed by findings from Part A, examine associations between emergent household gender dynamics, social norms, or discriminatory gender norms and 1) risk factors and health behaviors and 2) PTB.

Study design and populations of interest

Informed by a convergent parallel mixed methods study design, this study used both qualitative and quantitative methods concurrently to gather and analyze data together to address the study's overarching objectives (Figure 2.1).

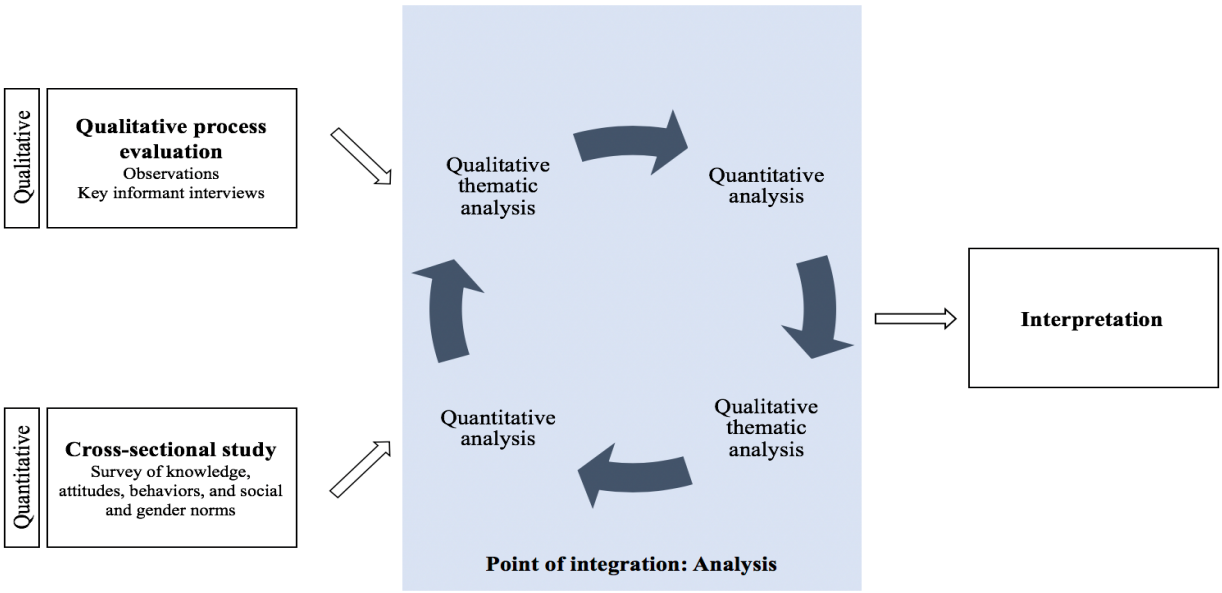

Figure 2.1. Convergent parallel study design for mixed methods implementation study to uncover promising SBCC approaches to address risk factors for PTB.

The data collection approaches used for Strand #1 and Strand #2 are outlined in Figure 2.2 below.

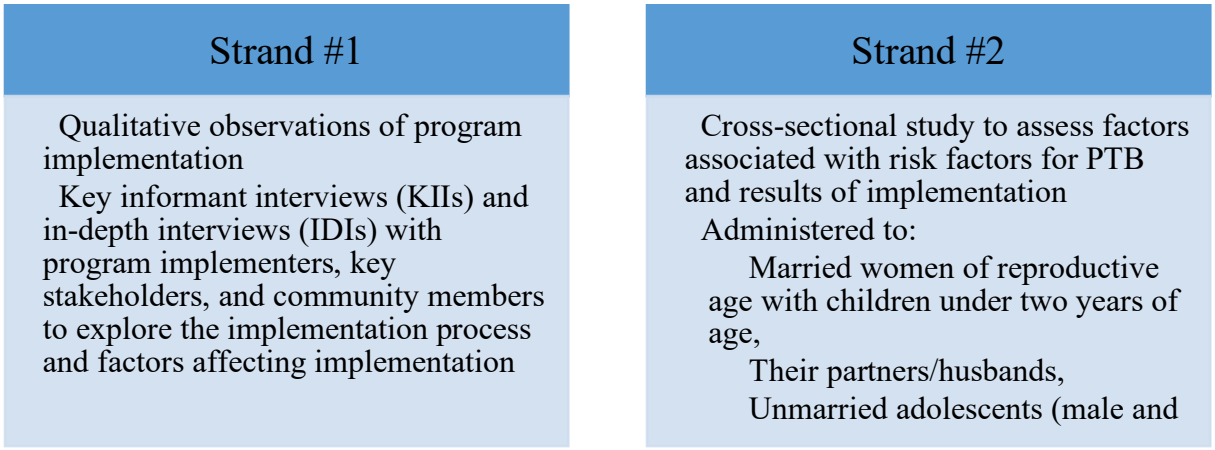

Figure 2.2. Data collection approaches used for Strand #1 and Strand #2 as part of this mixed methods study to uncover promising SBCC approaches to address risk factors for PTB.

Populations of interest

Populations of interest for KIIs conducted as part of Strand #1 included:

- BOT implementer
- Key local BOT stakeholders such as male/female community leaders or faith leaders
- Traditional birth attendant
- Facility-based health worker
- Community health worker

In-depth interviews were also conducted with:

- Currently married/in union women of reproductive age (20–49) who are either currently pregnant or have given birth in the past two years
- Currently married/in union adolescent girls (15–19) who are either currently pregnant or have given birth in the past two years
- Spouses/partners of women of reproductive age (15–49) who are either currently pregnant or have given birth in the past two years
- Unmarried/not in union adolescent girls (15–19 years)
- Unmarried/not in union adolescent boys (15–19 years)
- Extended family member (mother-in-law, sister-in-law, mother, or sister) of women of reproductive age (15–49)

Inclusion criteria for KIIs and IDIs are shown in Table 2.1.

Table 2.1. Populations of interest and inclusion criteria for KIIs and IDIs conducted as part of Strand #1.

Type	Type of participant	Inclusion criteria
KIIs [2]	BOT implementer	Have supported implementation of BOT activities for at least three months at the time of the interview; 18 years or older Did not participate in Part A
	Key local BOT stakeholder: ● Male/female community leaders Male/female faith leaders	Be identified by BOT staff as a local-level stakeholder or partner in sites where BOT is active; 18 years or older Did not participate in Part A
	Traditional birth attendant	18 years and older; work in a region where BOT is being implemented; have heard of BOT or its activities (either directly through participation or indirectly) Did not participate in Part A
	Facility-based health worker	18 years and older; work in a region where BOT is being implemented; have heard of BOT or its activities (either directly through participation or indirectly) Did not participate in Part A
	Community health worker	18 years and older; work in a region where BOT is being implemented; have heard of BOT or its activities (either directly through participation or indirectly) Did not participate in Part A
IDIs	Currently married/in union women of reproductive age (20–49) who are either currently pregnant or have given birth in the past two years	Currently in union; aged 20–49 years; currently pregnant or has given birth in the past two years; resident in a region where BOT is being implemented; have heard of BOT or its activities (either directly through participation or indirectly) Did not participate in Part A
	Currently married/in union adolescent girls (15–19) who are either currently pregnant or have given birth in the past two years	Currently in union; 15–19 years; currently pregnant or have given birth within the past two years; resident in a region where BOT is being implemented; have heard of BOT or its activities (either directly through participation or indirectly) Did not participate in Part A
	Spouses/partners of women of reproductive age (15–49) who are either currently pregnant or have given birth in the past two years	Partners/husbands (at least 15 years of age) of women of reproductive age (15–49) who are either currently pregnant or have given birth within the past two years; resident in a region where BOT is being implemented; have heard of BOT or its activities (either directly through participation or indirectly) Did not participate in Part A Can be but not required to be married/in union with a woman participating in the study.
	Unmarried/not in union adolescent girls (15–19 years)	Unmarried/not in union; aged 15–19 years; female; resident in a region where BOT is being implemented; have heard of BOT or its activities (either directly through participation or indirectly) Did not participate in Part A

[2] Note: The specific type of BOT implementers, key local BOT stakeholders, traditional birth attendants, and skilled birth attendants were contextualized in each BOT country by the Country Study Lead.

The populations of interest for structured interviews as part of the cross-sectional study for Strand #2 were:

- Married/in union women 15-49 years with a child under two years old
- Resident partner/spouse of a woman 15-49
- Unmarried adolescents

Inclusion and exclusion criteria for the three populations of interest for the cross-sectional study conducted for Strand #2 are shown in Table 2.2.

Table 2.2. Populations of interest and inclusion criteria for structured interviews conducted as part of Strand #2.

Type	Type of participant	Inclusion criteria
Structured interviews	Married/in union women 15-49 years with a child under two	Currently in union with child under two years; resident in a region where BOT is being implemented Did not participate in Part A or Part B, Strand 1
	Resident partner/spouse of a woman 15-49	Resident partner/spouse of a woman (15-49) with a child under two years; living in an index household with an eligible and recruited woman 15-49 years; at least 15 years old; resident in a region where BOT is being implemented Did not participate in Part A or Part B, Strand 1
	Unmarried adolescents	Never been married; currently residing in a household separate from an eligible woman 15-49; Age 15-19 years (although the age of majority is 18 years, we randomly selected unmarried adolescent ages 15-19 who are living in households separate from index women); male or female; resident in a region where BOT is being implemented Did not participate in Part A or Part B, Strand 1

Study setting

This study was conducted in select implementation areas of the Born on Time project in Bangladesh, Ethiopia, and Mali. The administrative units within each country are outlined in Table 2.3.

Table 2.3. Study sites across three countries for this mixed methods study.

Strand	Bangladesh	Ethiopia	Mali
Strand #1	Mithapukur Pirgachha Taragonj	North Gondar South Gondar West Gojjam	Kadiolo Koutiala Sikasso
Strand #2	Mithapukur Pirgachha Taragonj	North Gondar South Gondar West Gojjam	Kadiolo Koutiala Sikasso

Sampling strategy and recruitment

Strand #1

Maximum variation sampling was used to select program activities to observe in each of the three countries. Selection of BOT activities to observe was based on variation in communication channels being used, audience of interest, and focus of the BOT activity. Ensuring maximum variation, activities were randomly selected for observations from a planned roster of BOT activities for the period of data collection.

Purposive sampling was used to recruit participants meeting the inclusion criteria outlined in Table 2.1 for KIIs and IDIs. Local influential community members and community health workers in each of the three countries were consulted and asked to identify potential participants based on the participant types outlined above. These individuals provided their advice on potential women, men, and adolescents willing to participate in the study. Adults were then recruited for participation. Married/in union adolescent girls (15-19) were considered emancipated adults and therefore parental permission was not sought for them. All adolescent minors 15-17 years were recruited after parental permission was obtained. For minors 15-17 years, parents were first approached and then the adolescents. For Strand #1, adolescents were selected purposively after consulting community leaders or community health workers. Their parents were then approached first prior to beginning recruitment with the adolescent.

BOT implementers, BOT stakeholders, and community members were purposively sampled based on the sample sizes outlined in Table 2.1. Active recruitment then took place to reach the sample sizes outlined in Table 2.1. Based on the recommended potential participants, the interviewers then approached these prospective participants for recruitment. The interviewer then began the recruitment and consent discussion. Oral informed consent, or assent for unmarried participants 15-17 years of age, was received from all participants before beginning any data collection.

Strand #2

Multi-stage sampling was used to select respondents using probability proportionate to size sampling. Within each country and study site, three districts were selected. Enumeration areas were then randomly selected within each district using probability proportional to size (PPS) sampling. Once EAs were selected, a mapping of each selected enumeration area and a household listing process was conducted with the support of local health extension workers/local guides. A household listing form facilitated this process to identify all households where either 1) a currently married/in union woman aged 15–49 (with child under two years) lived or 2) an unmarried adolescent (15–19 years, female or male) lived. From the household listing, two separate sampling frames were created: a sampling frame of households with currently married/in union women aged 15–49 (with child under two years) and a sampling frame of households with an unmarried adolescent (15–19 years, female or male). Thirty households were randomly selected from each selected EA using systematic random sampling. Interviews with the spouses/partners of the female respondents were conducted within every alternate household.

Following the household listing process and random selection, an enumerator approached the household member and explained the reasons for and purpose of the study and why the prospective participant was recruited for participation. Once confirming that the prospective participant met all inclusion criteria, the recruitment script was read, which included asking

the eligible respondent if they were interested in participating. If the woman, man, or unmarried adolescent agreed, the oral informed consent process was begun. All adolescent minors 15-17 years were recruited after parental permission was obtained. Married/in union adolescent girls (15-19) were considered emancipated adults and therefore parental permission was not sought for them. Oral informed consent, or assent for unmarried participants 15-17 years of age, was received from all participants before beginning any data collection.

Sample size

Strand #1

Approximately 25 observations of SBCC activities were scheduled to take place in all three countries.[3] To ensure sufficient sample sizes for KIIs and IDIs, approximately four interviews with each type of participant were conducted in each country. Table 2.4 shows the total observations, KIIs, and IDIs conducted by participant type per country and across all settings.

Table 2.4. Number of observations, KIIs, and IDIs conducted by country for Strand #1.

Type	Type of participant	Bangladesh	Ethiopia	Mali	Total
Observations	Observations of SBCC activities	0	25	25	50
KIIs	BOT implementer	2	4	1	7
	Key local BOT stakeholder: Male/female community leaders and male/female faith leaders	4	4	7	15
	Traditional birth attendant	6	3	2	11
	Facility-based health worker	7	4	9	20
	Community health worker	1	4	1	6
IDIs	Currently married/in union women of reproductive age (20–49) who are either currently pregnant or have given birth in the past two years	4	6	5	15
	Currently married/in union adolescent girls of reproductive age (15–19) who are either currently pregnant or have given birth in the past two years	4	2	4	10
	Spouses/partners of women of reproductive age (15–49) who are either currently pregnant or have given birth in the past two years	4	4	5	13
	Unmarried/not in union adolescent girls (15–19 years)	4	4	6	14
	Unmarried/not in union adolescent boys (15–19 years)	4	4	1	9
	Extended family member (mother-in-law, sister-in-law, mother, or sister) of women of reproductive age (15–49)	4	4	4	12

[3] Due to the effects of the COVID-19 pandemic, observations were not able to be conducted in Bangladesh

Strand #2

For each sample, we calculated the sample size based on a conventional confidence level of 95% (alpha=0.05) and power of 0.8. For this study, P1 was estimated at 0.5 and P2 at 0.6. Under these assumptions, the required sample size per sub-sample was approximately 820. We factored into this calculation a design effect of 2.0 to correct for sampling inefficiency related to the cluster sampling design (as randomized selection only occurred at the enumeration area level). The design factor also corrected for correlations that may exist at the community level between households sharing the same environment, and also at the household level among individuals in the same household.

Assuming a non-response rate of 10%, we aimed to interview approximately 940 eligible index women, up to 470 resident partners/spouses of the eligible index women, and up to 940 unmarried adolescents (470 female and 470 male) with a 5% margin of error. For unmarried adolescents, male or female respondents were interviewed from households independent from households of eligible index women based on a separate household sampling frame. We expected a maximum of 2,350 participants in each country, for a total of 7,050 across the three countries.

Final sample sizes for Strand #2 are shown in Table 2.5.Due to unforeseen effects of the COVID-19 pandemic on data collection, sample sizes varied across study settings.[4]

Table 2.5. Number of structured interviews conducted by country for Strand #2.

Type	Type of participant	Bangladesh	Ethiopia	Mali	Total
Structured interviews	Currently married/in union women 15-49 years with child under two years (index)	927	855	904	2686
	Resident partner/spouse of an index woman 15-49	466	432	455	964
	Unmarried adolescents (index)	929 (465 female;464 male)	871 (444 female; 427 male)	902 (466 female; 436 male)	2702

Data collection instruments

In the table below, each part of data collection and the major components are outlined. All data collection instruments used were informed by findings from a formative qualitative study (Johns Hopkins Center for Communication Programs, 2020) and by a review of BOT's existing SBCC approaches.

[4] In Ethiopia, data collection was underway during the beginning of the COVID-19 pandemic. Data collection was stopped early in response to concerns for the study team's health and public transportation interruptions. In fact, public transportation was stopped just after the decision was made to stop data collection. In Bangladesh and Mali, data collection was postponed until Fall 2020. In Bangladesh, the new timing meant that data collection took place during a particularly rainy period, with floods hindering progress early in the process. In Mali, the new timing also led to numerous challenges. It was harvest season, which slowed recruitment and data collection, and an ongoing governmental Malaria initiative meant that key informants were busy with other, more pressing expectations during a portion of data collection.

Table 2.6. Major components of interview/facilitator guides for this mixed methods study.

Study Part	Major components that may be included in interview/facilitator guides
Strand #1	Observation checklists were used to gather information on a range of SBCC activities. The checklists evaluated facilitators' communication skills, content of activities (e.g. topic, message, and quality), and audience participation and engagement. Key influential community members answered questions about their perspectives on BOT, reasons for participation/non-participation, participation in activities, ongoing barriers to participation, and other unmet needs in their communities. KIIs with BOT implementers focused on implementers' experiences with the BOT SBCC activities, their roles in the project, and their perspectives and recommendations. Community members answered questions about their knowledge of and familiarity with BOT, their participation and engagement in SBCC activities, and their perspectives on the project.
Strand #2	Study instruments include a set of eight sections. These sections follow the themes outlined in the Methods section above and include: socio-demographics; pregnancy history; lifestyle factors (including family and household dynamics, discriminatory gender norms, and attitudes towards early marriage); infections; nutrition; contraception; community-level resources; and media and BOT intervention exposure.

Ethics

This multi-country research study secured ethical approval from multiple institutions prior to data collection. CCP secured ethical approval from the Johns Hopkins Bloomberg School of Public Health's Institutional Review Board (IRB) as well as local ethical review boards in Bangladesh, Ethiopia, and Mali.

Prior to data collection, a multi-day training workshop, including pretesting the interview and focus group guides, for local study teams (including local co-investigators, data collectors, and supervisors) was conducted. Training content included information on research ethics in the field, rights of human subjects during research, research methodology and protocol, informed consent, data collection tools, qualitative interviewing and focus group facilitation techniques, and data management, security, and quality. Training on processes and logistics for field management, supervision, communication, and documentation was also provided.

Analysis

Qualitative data gathered in Strand #1 as part of this mixed methods study was analyzed in tandem with quantitative data gathered in Strand #2. This integrated analytical approach demanded iterative data analysis wherein evidence from qualitative and quantitative sources was integrated and analyzed repeatedly to refine research questions over time.

Qualitative analysis

The overarching research question guiding the qualitative analysis process was: *what is the demonstrated potential of SBCC approaches at the community level in study countries to address PTB?* Informed by the framework method (Gale, Heath, Cameron, Rashid, & Redwood, 2013), a participatory analysis workshop was conducted to guide a thematic analysis of qualitative data gathered from observations, KIIs, and IDIs. Data analysis was conducted with the English and/or French transcripts to encourage comparisons across settings. Our analytical approach was guided by our conceptual framework focusing on key

aspects of implementation, including feasibility/practicality, acceptability, and fidelity (Bowen et al., 2009, p. 454). Guiding questions used to interrogate the qualitative data included:

1. To what extent is the program implemented with intended participants using existing means, resources, and circumstances and without outside intervention?
2. To what extent is the program judged as suitable, satisfying, or attractive to program deliverers? To program recipients?
3. To what extent can the program be successfully delivered to intended participants in some defined, but not fully controlled, context (Bowen et al., 2009, p. 454)?

Analysis was conducted separately by country. Analysis included a focus on key informants' and community members' perspectives of successful aspects of programmatic activities, barriers to feasibility, acceptability, or successful implementation, and recommendations for improvement. These qualitative findings are presented in a separate annex that complements the results presented in this overarching report.

Quantitative analysis

To analyze quantitative data gathered as part of Strand #2, we conducted univariate, bivariate, and multivariate analyses to examine associations between cross-cutting socio-demographic and contextual factors, key health behaviors, and PTB. Cross-cutting contextual factors included knowledge, self-efficacy, couple communication, family and household dynamics, discriminatory gender norms, social norms, and access to and availability of health services. Table 2.7 shows the principal measures considered within and across countries. Variable definitions and categorizations varied across countries and are detailed in their respective chapters throughout this report where relevant.

Multivariate regressions were then fit to examine factors associated with key preventive behaviors. Following these initial analyses, we then examined the individual-, household-, and community-level factors associated with PTB. Cross-cutting factors as well as relevant preventative behaviors were included in models of PTB to enable the identification of the factors associated with PTB in each country context.

Table 2.7. Principal measures included in analyses conducted within and across study settings.

Measure type	Details of measure
Socio-demographic characteristics	**Age** **Education** **Wealth index** **Vulnerability index**: Summary measure of self-reported experience of five sources of vulnerability **Parity**
Individual-level factors	**Knowledge**: Summary measure of self-reported knowledge related to different health areas (e.g. family planning methods; ANC visits; birth complications; etc.) **Sources of information** about relevant health topics (e.g. family planning, nutrition, pregnancy, etc.) **Self-efficacy**: Self-efficacy, or confidence that one could engage in a particular behavior (e.g. maternal health, contraceptive use, nutrition, delaying child marriage, etc.) **Workload**: Summary measures of workload during pregnancy (all forms of work; heavy workload; and weighted versions based on whether participants considered that work to be heavy)
Household-level factors	**Couple communication**: Summary measure of communication about six health topics (family planning, nutrition, pregnancy, child health, etc.) **Decision-making**: Summary measures of 11-12 topics based on decisions made by couples; decisions made with women involved; decisions made by women only; and decisions made by men only **Household support**: Support, and source of support, to women during pregnancy **Household environment**: Stress or compassion in the household
Community-level factors	**Discriminatory gender norms**: 24-item Gender Equitable Men scale[5] administered, with a full scale as well as four previously published sub-scales constructed related to 1) violence; 2) sexual relationships; 3) reproductive health; and 4) household responsibilities (domestic chores and daily life); **Social norms**: bounded descriptive norms assessed for specific behaviors (e.g. maternal health, contraceptive use, adolescent health, etc.)
Outcomes of interest	**Early ANC** **Four ANC check-ups** **Place of delivery** **PTB** **Birth to a low birth weight baby** **RTI/UTI during pregnancy** **Maternal nutrition** **Current use of any contraceptive method**

[5] The Gender Equitable Men's Scale has been tested in multiple countries and is considered a valid measure for assessing gender equitable norms as defined by the authors of the original scale (C-Change, 2014; Pulerwitz & Barker, 2008). See Chapter 6 for a more detailed description.

Table 2.8 shows the principal multivariate models developed within and across countries.

Table 2.8. Multivariate models developed for each country to examine factors related to key preventive behaviors and PTB.

Chapter	Outcome of multivariate model fit
Four	Early ANC Four or more ANC visits Hospital delivery
Five	Self-reported pre-term birth Low birth weight
Eight	RTI/UTI during pregnancy
Nine	Reduction in food consumption during pregnancy
Ten	Current use of a contraceptive method

Outline of report

This report is organized into thirteen chapters. Following an introduction and background to risk factors for and experiences of preterm birth in Bangladesh, Ethiopia, and Mali in Chapter One, Chapter Two provides a detailed description of the study's methodology. Results presented in this report focus on the quantitative findings[6] from Strand #2 and are presented in the following 10 chapters as outlined below:

- Chapter Three: Overview of participants
- Chapter Four: Women's pregnancy experiences
- Chapter Five: Determinants of preterm birth
- Chapter Six: Discriminatory gender norms and practices
- Chapter Seven: Household power dynamics
- Chapter Eight: Reproductive infections and malaria
- Chapter Nine: Maternal nutrition
- Chapter 10: Family planning
- Chapter 11: Adolescent health
- Chapter 12: Media exposure

Drawing on these findings, Chapter 13 synthesizes findings across the three settings to inform conclusions and recommendations for the way forward in efforts to address risk factors for PTB.

[6] These qualitative findings are presented in a separate annex that complements the results presented in this overarching report.

Chapter Three: Overview of participants

Introduction to the study population

The BOT study is conducted in three high PTB prevalence countries: Bangladesh, Ethiopia, and Mali. The quantitative strand (Strand #2) of the study focused on household surveys with three key populations: women (15-49 years) who are currently married or in a union and have a child under 2 years, their husbands or partners, and unmarried adolescents (15-19 years).

Chapter Three provides us with the socio-demographic profile of the three key audiences of this PTB prevention initiative. The chapter provides a detailed background of the three study sites in terms of their socio-demographic background, their assets and vulnerabilities, and their WASH habits. The study was conducted in Rangpur district, Bangladesh; Amhara region, Ethiopia; and Sikasso district, Mali.

Socio-demographic profiles

The socio-demographic profile includes age, education, religion, occupation, and mean age at marriage. In addition, the profile also includes the vulnerability status and WASH practices of the three respondent groups.

Table 3.1 includes the background details of women (15-49 with child < 2 years) and men's (partner's/husbands of women with child < 2 years). Table 2 includes background details of adolescents.

Women with a child under two years (15-49 years)

Bangladesh

A total number of 927 women with a child under two years were interviewed in Bangladesh. Of these, the majority were in the younger age group (15-24 years) followed by 38% in the 25-34 years age group. About 16% of the sample consisted of married adolescents 15-19 years. Only 6% of the sample was in the 35-49 years age group. The greater number of younger women in the sample is because we have selected women with a child under two years. In Rangpur district, 72% of the sample were educated at the level of secondary school or higher (Table 3.1). Another 23 percent of the sample had primary education and only 3% were without any formal education.

The majority of the respondents were Muslims (92%) followed by Hindus (7%). The women in Bangladesh were primarily homemakers (92%) with a very small percent working outside the home. Very few are farmers, or skilled workers and even fewer ran their own small businesses. The mean age at marriage of the sample was 16.8 years.

The vulnerability index included four questions related to whether in the past year the family had lacked enough food to eat, been unable to send their children to school, couldn't afford to buy medicines and had faced a natural disaster such as flood or famine. Bangladesh reported

a high level of vulnerability primarily due to natural disasters in the region.[7] About three fourths of the respondents from Bangladesh reported being highly vulnerable (Table 3.1).

The presence of a handwashing station was observed in 94% of the households surveyed. Similarly, only 2% of the sample reported not having a toilet facility. The majority of the women had a pit latrine with a slab (74%). Another 18 percent reported other toilet types (Table 3.1).

Ethiopia

The total sample size in Ethiopia for women with a child under two years was 855. Ethiopia had only 2.2 percent women in the married adolescent category (15-19 years). More than half the respondents were between 15-24 years old. Another 32% were in the 25-34 year age group. For education, about 54% of the women reported no formal education and one third of the sample had primary education (Table 3.1). In the Amhara region, the sample was almost fully Christian (99%). About half the women reported that they work on their own land and another 12% said they work on someone else's land.

The occupation variable was a multiple response variable, meaning that a person could have more than one occupation. About 10% had small businesses and another 7% were *areke/tella* vendors. Among the sample, more than half the women reported they were also homemakers. The mean age of marriage of the women in the sample was 15.4 years. Thirty-seven percent of women in Amhara had high vulnerability.

The WASH practices in the Amhara region were poor. Only 4% of the households had handwashing stations and less than half the women reported washing their hands with soap after defecation. About 43% of women reported using the bush for defecation. The most commonly used toilets were open pit latrines (27%) and pit latrines with slab (27%).

Mali

The total sample size in Mali for women with a child under two years was 904. About 9% of the women were 15-19 years old. Approximately 44% of women were between 15 and 24 years old. Another 28% were between 25 and 34 years old. Sixty-one percent reported no formal education, with only 9% having some secondary or higher. Most participants were Muslim (93%). The most common occupations were farmer (41%) and housewife (41%). Mean age of marriage was 17.1 years. A handwashing station was observed in 25% of women's households. About 42 percent women in Mali reported a high vulnerability status indicating poor economic status.

Partners/husbands of women with a child under two years

Bangladesh

The men's sample in Bangladesh was 466. In Bangladesh, most men (55%) were between 25 and 34 years old (Table 3.1). More than one-third (34%) had at least some secondary education. The vast majority (94%) were Muslim. Business and farm on one's own land were each reported by approximately 26% of participants. Men's responses to the vulnerability index suggested high vulnerability (77%). A handwashing station was observed in most of

[7] In fact, data collection was disrupted for this study when Rangpur district witnessed its worse rainfall in a hundred years in October 2020.

men's households (87%). A pit latrine with slab was the most common type of toilet available (reported by 73% of men).

Ethiopia

Men (partners/husbands) of women with a child under two years were interviewed and their total sample was 432 (Table 3.1). About 61% of the sample were in the 35-55 age group, while a third of the sample was in the 24-34 age group. More than half the sample reported that they had no formal education, with 26% of the men completing primary level school and 15% had a secondary or higher education. Like the women, almost all the men were Christian (98%).

About 80% of men stated they were farmers working on their own land. Another 7% said they work on land owned by others (Table 3.1). Small businesses were reported by 13% of the men. More than half the men reported high vulnerability (Table 3.1).

WASH practices of Amhara men were poor as seen in the survey results. Only 5% had handwashing stations in their homes, and about 26% of the men washed their hands with soap after defecation. About 36% of the men used the bush or the open field. The most commonly used toilet was the pit latrine with the slab (47%), followed by pit latrine without the slab (16%).

Mali

The total sample for partners or husbands of women with a child <2 years was 455. Men in Mali were older (48% were 35 years old or older). Most had no formal education (55%) and were Muslim (93%). The most common occupation described was farmer (63%). Mean age of marriage reported by men was 21.5 years (Table 3.1). About half the men in the sample from Mali reported high vulnerability (Table 3.1).

Tables

Table 3.1. Socio-demographic profile of women (15-49) with a child under two years and husbands/partners (18-55) from Bangladesh, Ethiopia and Mali

	Married Women (15-49 years)			Men (18-55 years)		
Socio-demographic Profile	Bangladesh N=927	Ethiopia N= 855	Mali N=904	Bangladesh N=466	Ethiopia N= 432	Mali N=455
	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)
Age of participant (years)						
15-24	512 (55.2)	447 (53.6)	402 (44.0)	82 (17.5)	20 (4.7)	131 (28.7)
25-34	355 (38.3)	267 (32.0)	343 (37.5)	256 (55.0)	148 (34.2)	108 (23.7)
35-49 (women) 35-55 (men)	60 (6.5)	120 (14.4)	169 (18.5)	126 (27.5)	264 (61.1)	216 (47.6)
Education						
No formal education	33 (3.6)	468 (54.7)	552 (61.1)	69 (14.8)	248 (57.4)	250 (54.9)
Primary	223 (24.0)	267 (31.2)	274 (30.3)	204 (51.3)	116 (26.8)	140 (30.7)
Secondary or higher	671 (72.4)	120 (14.1)	78 (8.6)	193 (33.9)	68 (15.8)	65 (14.2)
Religion						
Christian	3 (0.3)	846 (99.0)	18 (2.0)	2 (0.4)	427 (98.8)	12 (2.6)
Muslim	858 (92.5)	9 (1.0)	839 (92.8)	436 (93.5)	5 (1.1)	421 (92.5)
Other	64 (7.0)	N/A	47 (5.2)	30 (6.1)	N/A	22 (4.9)
Occupation (multiple response)						
Farmer	7 (0.8)	402 (47.0)	371 (41.0)	110 (26.0)	346 (80.0)	287 (63.0)
Farmer (other's land)	12 (1.3)	106 (12.4)	39 (4.3)	66 (15.6)	36 (8.3)	11 (2.4)
Skilled worker	22 (2.4)	4 (0.5)	14 (1.5)	84 (19.8)	15 (3.4)	22 (4.8)
Unskilled worker	0	9 (1.0)	6 (0.6)	28 (6.6)	14 (3.2)	20 (4.4)
Business	8 (0.9)	93 (10.8)	5 (0.5)	100 (26.0)	58 (13.4)	27 (6.0)
Housewife	716 (92.3)	475 (55.5)	374 (41.3)	--	--	--
Unemployed	0	1 (0.1)	1 (0.1)	1 (0.24)	3 (0.7)	3 (0.6)
Areke/tella vendor	--	59 (6.9)	--	--	--	--
Age at marriage (mean years)	16.8 yrs	15.4 yrs	17.1 yrs	25.4 yrs	22 yrs	21.5yrs
Vulnerability Index						
Low	226 (24.6)	535 (62.6)	511 (56.9)	107(22.9)	196 (45.4)	224(49.2)
High	693 (75.4)	320 (37.4)	387(43.1)	359 (77.1)	236 (54.6)	231 (50.8)
WASH						
Presence of handwashing station (observed)	871 (94.0)	32 (3.7)	226 (25)	406 (87.1)	24 (5.6)	113 (24.8)
Toilet Use						
Pit latrine without slab / open pit	51 (5.5)	236 (27.6)	--	24 (5.1)	69 (16.0))	--
Pit latrine with slab	689 (74.3)	249 (29.1)	--	339 (72.7)	205 (47.4)	--
Other toilets	167 (18.0)	--	--	90 (19.2)	--	--
No facility / bush / field	20 (2.2)	370 (43.3)	--	13 (2.7)	158 (36.6)	--
Notes: Data on toilet use is not available for Mali						

Unmarried adolescent girls and boys (15-19)

Table 3.2 summarizes adolescents' socio-demographic profiles. The data are presented in a disaggregated manner for adolescent girls and boys. The Bangladesh sample included 465 adolescent girls (15-19 years) and 464 adolescent boys (15-19 years).

Bangladesh

In Bangladesh, 41% of adolescent girls were 16-17 years old, while 45% of adolescent boys were 16-17. Adolescent girls reported a higher level of secondary education (94 %) compared to adolescent boys (69%). As reported by adolescents, majority were Muslim (93% of adolescent girls and 92% of adolescent boys). Vulnerability was high for both adolescent girls and boys (76%).

A handwashing station was observed in 96% of adolescent girls' homes and 86% of adolescent boys' households. Handwashing with soap after defecation was commonly reported by both adolescent girls and boys (99%). The most common toilet used was a pit latrine with slab (75% of adolescent girls and 73% of adolescent boys, Table 3.2).

Ethiopia

The adolescent sample for Ethiopia included 444 adolescent girls (15-19 years) and 427 adolescent boys (15-19 years). In Ethiopia, 40% of adolescent girls were 16-17 years old, while only 32% of adolescent boys were of the same age. Thirty-one percent of adolescent girls and 36% of adolescent boys had at least some secondary school. Most were Christian (99%). A large percentage of participants reported being students (67% of girls and 72% of boys), followed by farmers (39% of girls and 8% of boys). A smaller percentage of adolescent girls' households were considered to have high vulnerability (31%) compared to boys (54%).

In terms of WASH practices, only four percent of adolescent girls and six percent of adolescent boys had a handwashing station (Table 3.2). Handwashing with soap after defecation was much lower in adolescent boys (35 %) compared with adolescent girls (62%).

Almost all Ethiopian adolescents reported toilet use. About one third of the adolescent girls use open pit latrines, another third used toilets with slabs and yet another third reported using other types of toilets (Table 3.2). About half the adolescent boys stated they used put latrines with slabs (Table 3.2) while the rest used open pit toilet (23%) and other types of latrines (27%)

Mali

The Mali adolescent sample included 466 adolescent girls (15-19 years) and 436 adolescent boys (15-19 years). Most adolescent girls and boys were 16 or 17 years old (53% of girls and 58% of boys). Many had completed primary school (60%), but a minority had completed some secondary or higher (3% of girls and 7% of boys). Most were Muslim (92% of girls and 95% of boys). Less than half the respondents reported being students (37% of girls and 41% of boys), while about 26% of girls and 32% of boys were farmers. About 41 percent girls and 38 percent adolescent boys reported being economically vulnerable (Table 3.2).

Tables

Table 3.2. Socio-demographic profile of unmarried adolescent girls and boys (15-19) from Bangladesh, Ethiopia, and Mali

	Adolescent Girls (15-19)			Adolescent Boys (15-19)		
Socio-demographic Profile	Bangladesh N= 465	Ethiopia N= 444	Mali N=466	Bangladesh N= 464	Ethiopia N= 427	Mali N=436
	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)
Age of participant (years)						
14-15	202 (43.4)	129 (29.0)	99(42.5)	150 (32.3)	51 (11.9)	140 (32.1)
16-17	191 (41.1)	179 (40.3)	246 (53.0)	207 (44.6)	136 (31.8)	251 (57.7)
18-19	72 (15.4)	136 (30.7)	21 (4.5)	107 (23.1)	240 (56.2)	45 (10.2)
Education						
No formal education	1 (0.2)	18 (4.2)	171 (36.9)	9 (1.9)	3 (0.7)	43 (32.8)
Primary	25 (5.4)	278 (65.1)	278 (59.6)	133 (28.6)	279 (62.9)	263 (60.3)
Secondary or higher	439 (94.4)	131(30.7)	16 (3.4)	322 (69.4)	162 (36.4)	30 (6.8)
Religion						
Christian	10 (2.2)	423 (99.0)	12 (2.6)	2 (0.4)	440 (99.1)	8 (1.8)
Muslim	431 (92.6)	4 (1.0)	429 (92.0)	427 (92.1)	4 (0.9)	412 (94.5)
Other	24 (5.2)	--	25 (5.4)	35 (7.5)	--	16 (3.7)
Occupation (multiple response)						
Farmer	1 (0.2)	165 (38.6)	122 (26.1)	9 (2.0)	36 (8.1)	140 (32.1)
Farmer (other's land)	0	5 (1.1)	18 (3.8)	20 (4.3)	3 (0.7)	18 (4.1)
Skilled worker	3 (0.6)	1 (0.2)	0	25 (5.4)	0	3 (0.6)
Unskilled worker	3 (0.6)	34 (7.9)	7 (1.5)	25 (5.4)	3 (0.7)	15 (3.4)
Business	3 (0.6)	16 (3.7)	10 (2.5)	20 (4.3)	15 (3.3)	8 (1.8)
Student	464 (99.8)	287 (67.2)	174 (37.3)	12 (2.5)	320 (72.0)	180 (41.2)
Unemployed	0	0	0	0	0	1 (0.2)
Areke/tella vendor	--	0	--	--	11 (2.5)	--
Vulnerability Index						
Low	110 (23.7)	306 (68.9)	273 (58.9)	109 (23.5)	198 (46.3)	270 (62.1)
High	354 (76.2)	138 (31.1)	190 (41.1)	355 (76.5)	229 (53.7)	165 (37.9)
WASH						
Presence of handwashing station (observed)	445 (95.7)	16 (3.6)	127 (27.3)	399 (85.9)	26 (6.1)	120 (27.5)
Handwashing with soap after defecation; Yes	443 (99.10)	274 (61.7)	341 (73.2)	455 (98.9)	149 (34.8)	297 (68.2)
Toilet Use						
Pit latrine without slab / open pit	19 (4.0)	145 (32.6)	--	24 (5.2)	100 (23.4)	--
Pit latrine with slab	349 (75.1)	144 (32.4)	--	340 (73.3)	211 (49.4)	--
Other toilets	94 (20.2)	154 (34.6)	--	90 (19.3)	115 (26.9)	--
No facility / bush / field	3 (0.7)	1(0.2)	--	10 (2.2)	1 (0.2)	--
Notes: Data on toilet use is not available for Mali						

Chapter Four: Women's pregnancy experiences

This chapter describes women's pregnancy experiences in the past two years. This chapter is organized into three sections: 1) antenatal care, services received during pregnancy, and birth preparedness; 2) maternal morbidity and complications during pregnancy and delivery; and 3) knowledge, self-efficacy, and social norms related to maternal health. Within each section, responses are summarized by country and across participant types.

Antenatal care, services received, and birth preparedness

Table 4.1. shows antenatal care sought, services received during pregnancy, and women's birth preparedness during their most recent pregnancy. Results are described below by country setting.

Bangladesh

Antenatal care visits

Almost all (97.0%) women in Bangladesh reported attending at least one ANC visit during their most recent pregnancy. However, only half (50.8%) attended four or more ANC visits and only one-quarter (25.7%) started ANC in their first trimester. Around half (53.5%) of women said their spouse/partner had accompanied them to ANC visits. Of the 28 women who did not attend any ANC check-ups, 60.7% did not believe ANC to be necessary, 28.6% said their family did not think it necessary and 17.9% reported that their spouse/partner felt it was unnecessary.

Health services during pregnancy

Women were asked about eight specific services they may have received during an ANC visit. The most commonly reported components of ANC consultations were having an abdominal check-up (94.6%), being weighed (91.5%), and receiving nutrition counseling (92.3%). Women were less likely to report having had their height measured (72.4%), eyes examined (75.4%), and getting a blood test (78.8%) during an ANC visit. On average, women in Bangladesh reported receiving 6.7 of 8 ANC services. In terms of other health services, most women (86.0%) reported receiving or buying iron supplements either in tablet or syrup form. Hardly any women (1.5%) or men (9.0%) reported getting tested for HIV during the pregnancy period. Almost no women reported receiving a mosquito net (0.6%) during their most recent pregnancy.

Birth preparedness

Most (90.8%) women reported knowing the baby's due date. Almost two-thirds of women had decided where to deliver their baby (63.1%) and set aside money for an emergency (63.7.%). About half (52.3%) said they saved an emergency contact number and 39.4% had made arrangements for emergency transportation. On average, women undertook 3.1 out of five birth preparedness actions.

Ethiopia

Antenatal care visits

Almost all (94.7%) women in Ethiopia reported attending at least one ANC visit during their most recent pregnancy. A little more than half (58.5%) attended four or more ANC visits and 42.3% started ANC in their first trimester. Only about a third (35.4%) of women said their spouse/partner accompanied them during ANC visits. Of the 45 women who did not attend any ANC check-up, about one-third (37.8%) said that there were other reasons. Among these participants (n=17), six said that they did not feel sick, four said that they were not aware of ANC visits, four said that they did not know they were pregnant, and two said they were not comfortable or did not want ANC. Other women said they had too much work (15.6%) or were afraid to go (13.3%).

Health services during pregnancy

Of the eight ANC components we asked about, the most commonly reported were abdominal check-ups (89.9%), getting a blood test (86.7%), and having one's blood pressure taken (85.0%). Women were less likely to report getting nutrition counseling (75.3%), having an eye exam (47.5%), or their height measured (43.9%). On average, women reported receiving 6.0 of the 8 ANC services during their visits. In terms of other health services, four in ten women (42.1%) received or bought iron tablets or syrup. Roughly three-quarters (78.6%) of women and half (49.3%) of men reported getting tested for HIV during the pregnancy period. Whereas only 6.2% of women reported receiving intermittent preventive treatment in pregnancy (IPTp) for malaria, 29.6% of men reported that their spouse or partner had received IPTp. Similarly, 28.8% of women said they received mosquito net during pregnancy, whereas 55.1% of men reported that their household had received a mosquito net during their spouse/partner's most recent pregnancy. (The discrepancy may be due to differences in how the question was posed).

Birth preparedness

A majority of women (83.2%) had decided where to deliver their baby. Approximately six out ten women said they saved money for an emergency (61.8%), kept an emergency contact number (61.8%), knew the baby's due date (59.3%), and arranged for emergency transportation (59.3%). On average, women undertook 3.3 out of five birth preparedness actions.

Mali

Antenatal care visits

Most (85.7%) women in Mali reported attending at least one ANC visit during their most recent pregnancy. However, only half (53.5%) attended four or more ANC visits and about one-third (35.5%) started ANC in their first trimester. Only a third (31.4%) of women said their spouse/partner accompanied them during ANC visits. Of the 129 women who did not attend any ANC check-ups, 26.5% said their husband or family would not allow them to go, 25.6% said their spouse or partner did not think it was necessary, and 19.4% said it was too costly.

Health services during pregnancy

Of the eight ANC components we asked about, women most commonly reported getting their weight measured (84.5%), abdominal checked (83.4%), and blood pressured checked (83.1%). Women were less likely to report having a urine sample taken (71.1%), blood test

done (71.1%), or receiving nutrition counseling (65.5%). On average, women reported receiving 6.2 of the 8 ANC services during their visits. A majority of women (84.1%) reported receiving or buying iron supplements during their most recent pregnancy. Approximately one-third of women (30.2%) and men (33.6%) said they were tested for HIV during the pregnancy period. Most women (81.6%) and men (81.5%) reported that they/their spouse had received IPTp during pregnancy. Most men (82.0%) reported that their household had received a mosquito net during the spouse/partner's most recent pregnancy, whereas only 65.6% women reported receiving one.

Birth preparedness

Birth preparedness is low in Mali with women, on average, undertaking only 1.8 out of five birth preparedness actions. Nearly half of women said they set aside money for an emergency (45.7%) or had decided where to deliver their baby (43.0%). Around one-third of women said they knew their baby's due date (34.9%) and had made arrangements for emergency transportation (32.7%). Just over one-quarter (28.1%) kept an emergency contact number.

Tables

Table 4.1. ANC and birth preparedness indicators among women (15-49 years) from Bangladesh, Ethiopia and Mali

	Women			Men		
	Bangladesh N=927	**Ethiopia N = 855**	**Mali N = 904**	**Bangladesh N =466**	**Ethiopia N=432**	**Mali N=455**
	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)
Attended at least one ANC visit during pregnancy	899(97.0)	810 (94.7)	775(85.7)			
Started ANC in the first trimester	238(25.7)	362 (42.3)	321(35.5)			
Attended 4 or more ANC visits	471(50.8)	500 (58.5)	484(53.5)			
Woman was accompanied by spouse/partner during ANC visits	481(53.5)	303 (35.4)	284(31.4)			
Components of ANC visits						
Weight measured	848 (91.5)	732(85.6)	764(84.5)			
Abdominal check-up	877(94.6)	769(89.9)	754 (83.4)			
Height measured	671(72.4)	375(43.9)	742 (82.1)			
Blood pressured checked	828 (89.3)	735(86.0)	751 (83.1)			
Urine sample taken	749 (80.8)	702(82.1)	643(71.1)			
Blood test done	730 (78.8)	741(86.7)	643(71.1)			
Eye exam	698 (75.3)	406(47.5)	731(80.9)			
Nutrition counseling	856 (92.3)	642(75.1)	592(65.5)			
Mean number of services provided during ANC visits (8 total)	6.7 (1.9)	6.0(2.3)	6.2 (2.8)			
Received or bought iron tablets or syrup during pregnancy	797(86.0)	352 (41.2)	760(84.1)			
Was tested for HIV during pregnancy	14(1.5)	672 (78.6)	273(30.2)	42(9.0)	213 (49.3)	153(33.6)
Woman or spouse/partner received IPTp during pregnancy		53 (6.2)	738(81.6)		128 (29.6)	371(81.5)
Woman or household received mosquito net during pregnancy	6(0.6)	246 (28.8)	593(65.6)		238 (55.1)	373(82.0)
Birth preparedness actions						
Knew the baby's due date	842(90.8)	507(59.3)	315(34.9)			
Decided where to deliver the baby	585(63.1)	711(83.2)	389(43.0)			
Arranged for emergency transportation	365(39.4)	507(59.3)	296(32.7)			
Saved money for an emergency	590(63.7)	528(61.8)	413(45.7)			
Kept an emergency contact number	485(52.3)	528(61.8)	254 (28.1)			
Mean number of birth preparedness actions taken (5 total)	3.1 (1.6)	3.3 (1.5)	1.8 (1.7)			
Note: All values in the table include women who did not receive any ANC during their most recent pregnancy. These women and any missing values were recoded as not receiving ANC or a specific ANC service.						

Maternal morbidity and complications during pregnancy and delivery

Table 4.2. describes women's morbidities during their most recent pregnancy as well as complications reported during pregnancy as well as delivery. Results are described below by country setting.

Bangladesh

Health during pregnancy

Few women reported having high blood pressure (3.5%) or anemia (13.6%) during their most recent pregnancy. Less than half (44.3%) of women experienced at least one birth complication. The most common self-reported birth complications were premature rupture of membrane (21.4%), obstructed or prolonged labor (17.7%), and the baby not breathing (7.9%). Nearly three-quarters (71.4%) of women gave birth in a health facility.

Substance use in pregnancy

Almost half (46.5%) of all women said they consumed some form of tobacco, cannabis, alcohol, or other substance during their most recent pregnancy. About half (47.9%) of women reported eating pan (betal nut leaf) and another one-third (38.2%) ate supari (areca nut). Far fewer women said they consumed pan masala (4.5%), gutkha (areca nut) (1.4%). It was uncommon for women to report having smoked cigarettes (0.4%) or drank alcohol (0.1%) and no women reported using ganja or other substances.

Ethiopia

Health during pregnancy

While few women had high blood pressure (4.0%) during pregnancy, 42.1% experienced anemia. Roughly two-thirds of women in Ethiopia experienced at least one birth complication (mean: 1.9). The most common self-reported birth complications were obstructed or prolonged labor (28.2%) followed by post-partum hemorrhage (20.7%), early or premature contractions (19.3%), post-partum fever (17.9%), and severe breathlessness (17.9%). Based on the qualitative findings from Phase A (Johns Hopkins Center for Communication Programs, 2020), we included *Mitat*[8] in the list of birth complications, but only 5.0% of women selected it. Nearly three-quarters (74.2%) of women gave birth in a health facility.

Substance use in pregnancy

Drinking *tella* during pregnancy was very common with 83.9% of women reporting they had done so during their most recent pregnancy. Far fewer women mentioned drinking areke (7.0%). It was uncommon for women to drink beer (0.9%) or spirits (0.1%) during their most recent pregnancy and no women reported consuming tej or smoking.

[8] In Ethiopia, *Mitat* is a condition acquired from excessive exposure and work under the severe heat of the sun. In the qualitative findings from Phase A, this condition was linked to workload and preterm birth by several study participants from Ethiopia.

Mali

Health during pregnancy

Few women suffered from high blood pressure (14.4%) or anemia (11.7%) during pregnancy. About half of women (47.4%) experienced at least one birth complication (mean: 1.3). The most common self-reported birth complications were obstructed or prolonged labor (18.1%) followed by post-partum hemorrhage (17.8%) and fetal distress (13.7%). Based on the qualitative findings from Part A (Johns Hopkins Center for Communication Programs, 2020), we included *tozo gnimi*[9] in the list of birth complications, but only 2.2% of women selected it. Most women (87.7%) gave birth in a health facility.

Women in Mali were not asked questions about substance use in pregnancy.

Tables

Table 4.2. Maternal morbidity, pregnancy complications, and delivery complications as reported by women (15-49 years) or men (18-55 years) from Bangladesh, Ethiopia and Mali.

	Women		
	Bangladesh N=927	**Ethiopia N = 855**	**Mali N = 904**
	n (%)	n (%)	n (%)
Had high blood pressure during pregnancy	32 (3.5)	34 (4.0)	130 (14.4)
Was anemic during pregnancy	126 (13.6)	352 (41.2)	106 (11.7)
Experienced the following birth complications			
Early/premature contractions	64 (6.9)	165 (19.3)	86 (9.5)
Premature rupture of membrane	198 (21.4)	107 (12.5)	28 (3.1)
Excessive bleeding from vagina	34 (3.7)	95 (11.1)	107 (11.8)
Obstructed/prolonged labor	164 (17.7)	241 (28.2)	164 (18.1)
Hand/cord prolapse	1 (0.1)	24 (2.8)	18 (2.0)
Hydramnios- passage of too much water with small/ abnormal baby	6 (0.6)	84 (9.8)	48 (5.3)
Retained placenta	7 (0.8)	97 (11.4)	51 (5.6)
Large perineal tear	5 (0.5)	91 (10.6)	29 (3.2)
Convulsion	12 (1.3)	74 (8.7)	40 (4.4)
Unconscious/shock	5 (0.5)	71 (8.3)	62 (6.9)
Severe breathlessness	12 (1.3)	153 (17.9)	32 (3.5)
Fetal distress	6 (0.6)	27 (3.2)	124 (13.7)
Baby not breathing at birth	73 (7.9)	9 (1.1)	101 (11.2)
Mitat		43 (5.0)	
Tozo gnimi			20 (2.2)
Post-partum hemorrhage	7 (0.8)	177 (20.7)	161 (17.8)
Post-partum fever	10 (1.1)	153 (17.9)	86 (9.5)
Experienced at least one birth complication	411 (44.3)	548 (64.1)	428 (47.4)
Mean number of birth complications	0.7 (0.9)	1.9 (2.2)	1.3 (2.0)
Delivered in a health facility	662 (71.4)	634 (74.2)	793 (87.7)

Knowledge, self-efficacy, and social norms related to maternal health

Table 4.3. shows participants' knowledge, self-efficacy, and social norms related to maternal health topics. Results are described below by country setting and participant type.

[9] In Mali, *tozo gnimi* was mentioned by several study participants as a cause of preterm birth. Descriptions of *tozo gnimi* varied with some using it to describe a condition of the womb, uterus, or the placenta. One of the Country Study Leads in Mali said the term referred to toxoplasmosis.

Bangladesh

Maternal health knowledge

About three-quarters (77.5%) of women and half (55.2%) of men knew that women should attend at least four ANC visits during pregnancy. On average, women could name more danger signs of pregnancy and/or delivery than men (2.5 vs. 1.9, respectively). For both women and men, knowledge was highest for fever, chills, and vomiting (68.0% women vs. 53.6% men) and severe headaches, dizziness, and blurred vision (56.4% women vs. 57.7%). Women were least likely to know that fast and difficult breathing (3.6%) and placenta not delivered within an hour post-birth (1.5%) were danger signs. Men were least likely to know that prolonged labor (12+ hours) (1.9%) and placenta not delivered within an hour post-birth (0.6%) were danger signs.

Self-efficacy

Overall, women and men had high levels of self-efficacy to engage in ANC and birth-related behaviors. Most women (87.9%) and men (80.7%) had high perceived self-efficacy that they could go/help their partner attend at least 4 ANC check-ups. Similarly, 87.7% of women and 81.8% of men had high confidence in their ability to start ANC early. Eight in ten women (81.8%) had high self-efficacy that they could get their spouse/partner to accompany them to ANC visits, whereas only 74.0% of men expressed high confidence that they could accompany their spouse/partner. Most women (84.0%) had high self-efficacy that they could deliver in a health facility, whereas only 76.8% of men felt confident they could ensure their wife did so.

Bounded descriptive norms relating to ANC

We asked participants about the perceived prevalence of early timing of ANC, attendance of at least four ANC visits, and spousal accompaniment during ANC visits. Starting ANC in the first trimester was perceived to be common among pregnant women with 35.1% of women saying that 4-6 women started ANC early and 43.3% of women reporting that 7-10 women in their communities did so. A larger percentage (42.8%) of women felt that 4-6 women in their communities attended at least four ANC visits and slightly fewer (40.9%) said that 7-10 women in their communities went at least four times. Men also considered attending at least four ANC visits to be a widespread practice among pregnant women in their communities (45.1% said 4-6 women; 37.1% said 7-10 pregnant women went for at least four ANC visits). Men were asked about the perceived prevalence of men accompanying their pregnant wives during ANC visits. This practice was common with 42.9% of men reporting that 4-6 men accompanied their wives during ANC visits.

Bounded descriptive norms relating to birth preparedness

We asked about the perceived prevalence of two birth preparedness actions: arranging for emergency transportation for delivery and saving money to use later in case of an emergency. Over half (58.6%) of women reported that 0-3 pregnant women in their communities arranged for emergency transportation for delivery, which suggests that this practice is not normative. In contrast, 41.9% of women reported that 7-10 pregnant women in their communities set aside money in case of an emergency.

Bounded descriptive norms relating to birth complications, home births, and post-natal care

We asked participants about the perceived prevalence of birth complications during pregnancy, home births, and post-natal care visits within two days of the birth. Birth complications during pregnancy were not perceived to be common with 76.5% of women

reporting that 0-3 pregnant women experienced complications during pregnancy. Both women and men did not perceive home births to be very common in their communities. Over half of women (54.2%) and men (53.9%) reported that 0-3 pregnant women gave birth at home and about a third of women (29.2%) and men (31.8%) reported that 4-6 pregnant women delivered their baby at home. Post-natal care visits within two days of giving birth were not perceived to be common with 71.2% of women saying that 0-3 women received such visits and 20.9% saying that 4-6 women received a post-natal care visit.

Source of pregnancy information

Over one-third (39.4%) of women and 30.3% of men said they had no source of pregnancy information in the past six months. Among women, health workers (25.1%), family and friends (20.8%), and HDA leaders (20.2%) were the most common sources of pregnancy information. Among men, the most common sources were HDA leaders (28.3%), health workers (26.0%), and health assistants (24.0%).

Ethiopia

Knowledge

Most women (80.1%) and men (84.3%) knew that women should attend at least four ANC visits during pregnancy. On average, women could name more danger signs of pregnancy and/or delivery than men (3.6 vs. 2.5, respectively). For both women and men, knowledge was highest for vaginal bleeding and discharge (78.4% women vs. 66.7% men) and fever, chills, and vomiting (46.7% women vs. 32.9% men). Women were least likely to know that a placenta not delivered within an hour post-birth (23.4%) and fast or difficult breathing (10.8%) were danger signs. Men were least likely to know that extreme swelling of hands, feet, or face (12.0%) and severe abdominal pain or contractions before 37 weeks (8.8%) were danger signs.

Self-efficacy

Overall, levels of self-efficacy were more variable across the four ANC and birth-related behaviors. Most women (72.5%) and men (82.2%) had high self-efficacy that they/their wife could attend at least 4 ANC visits. Slightly fewer women (64.7%) and men (72.0%) had high self-efficacy that they/their spouse could start ANC early. Only half of women (52.2%) felt they could get their spouse/partner to accompany them to ANC visits and only 40.1% of men felt they could accompany their spouse/partner to ANC visits. Three-quarters of women (74.2%) had high self-efficacy that they could deliver in a health facility and even more men (81.3%) felt confident their wife could do so.

Bounded descriptive norms relating to ANC

We asked participants about the perceived prevalence of early timing of ANC, attendance of at least four ANC visits, and spousal accompaniment during ANC visits. Starting ANC in the first trimester was perceived to be common among pregnant women with 45.0% of women saying that 4-6 pregnant women in their communities started ANC early and 30.9% of women reporting that 7-10 pregnant women did so. Women and men perceived attendance at four or more ANC visits during pregnancy to be fairly widespread in their communities: 45.3% of women and 45.1% of men reported that 4-6 pregnant women in their communities attended least four ANC visits. Men were asked about the perceived prevalence of men accompanying their pregnant wives during ANC visits. Half of men (50.5%) reported that 0-3 men in their communities would accompany their wives during ANC visits and 39.6% said that 4-6 men would do so.

Bounded descriptive norms relating to birth preparedness

We asked about the perceived prevalence of two birth preparedness actions: arranging for emergency transportation for delivery and saving money to use later in case of an emergency. One-quarter (25.7%) of women reported that 4-6 pregnant women in their communities would make arrangement for emergency transportation and only 34.6% said that 7-10 women would take such action during pregnancy. A larger percentage (35.1%) of women said that 4-6 pregnant women in their communities would set aside money in the event of an emergency, however, only 15.2% said that 7-10 pregnant women did this.

Bounded descriptive norms relating to birth complications, home births, and post-natal care

We asked participants about the perceived prevalence of birth complications during pregnancy, home births, and post-natal care visits within two days of the birth. Birth complications during pregnancy were not perceived to be common with 84.6% of women reporting that 0-3 pregnant women in their communities experienced complications during pregnancy. Both women and men did not perceive home births to be very common in their communities. Three-quarters of women (75.1%) and men (74.3%) reported that 0-3 pregnant women in their communities gave birth at home. Post-natal care visits within two days of giving birth were not perceived to be common with 75.1% of women saying that 0-3 women received such a visit.

Source of pregnancy information

Over one-third (39.1%) of women and 31.7% of men said they had no source of pregnancy information in the past six months. For both men and women, health workers (44.6% women; 51.4% men) and health extension workers (34.9% women; 36.4% men) were the top sources of pregnancy information.

Mali

Knowledge

Almost two-thirds (63.5%) of men knew that women should attend at least four ANC visits during pregnancy. (add footnote: women's question was missing). On average, women could name slightly more danger signs of pregnancy and/or delivery than men (1.6 vs. 1.3, respectively). For both women and men, knowledge was highest for fever, chills, and vomiting (39.4% women vs. 41.5% men) and severe headaches, dizziness, and blurred vision (26.9% women vs. 18.9% men). Women and men were least likely to know that fast or difficult breathing (2.0% women vs. 1.3% men) and the placenta not delivered within an hour post-birth (0.9% women vs. 0.4% men) were danger signs.

Self-efficacy

Most women had high levels of self-efficacy when it came to ANC and birth-related behaviors. About eight in ten women had high self-efficacy that they could start ANC early (81.8%), attend at least four ANC visits (84.6%), and get their spouse/partner to accompany them (79.6%). Men were only asked about their self-efficacy to help their wife start ANC early, which most felt they could do (83.3%). Almost all women expressed high self-efficacy to deliver in a health facility (90.2%).

Bounded descriptive norms relating to ANC

We asked participants about the perceived prevalence of starting ANC in the first trimester and attendance of at least four ANC visits. Starting ANC in the first trimester was perceived

to be common among pregnant women with 34.0% of women saying that 4-6 pregnant women in their communities started ANC early and 20.1% of women reporting that 7-10 pregnant women did so. Some 18.1% of women in Mali said they did not know the prevalence of starting ANC early among pregnant women. A larger percentage of women reported attendance at four or more ANC visits as being fairly common (4-6 women out of 10) in their communities as compared to men (45.1% women vs. 34.7% men). Some participants were unable to estimate the prevalence of attending at least four ANC visits (16.8% women vs 17.8% men). In Mali, men were not asked about the perceived prevalence of spousal accompaniment during ANC visits.

Bounded descriptive norms relating to birth preparedness

In Mali, we only asked about one birth preparedness action: saving money to use later in case of an emergency. Nearly a quarter of women reported that 4-6 pregnant women in their communities set aside money in case of an emergency and only 10.6% said that 7-10 pregnant saved money. Another quarter (25.3%) of women felt unable to estimate the prevalence of this birth preparedness action.

Bounded descriptive norms relating to birth complications, home births, and post-natal care

We asked participants about the perceived prevalence of birth complications during pregnancy, home births, and post-natal care visits within two days of the birth. Birth complications were perceived to be fairly common among pregnant women in Mali with 24.7% of women reporting that 4-6 pregnant women in their communities experienced complications. Over one-third (38.6%) felt that 0-3 pregnant women in the communities experienced birth complications and 27.8% of women said they were unable to estimate how common birth complications were. Both women and men did not perceive home births to be widespread in their communities with 61.6% of women and 69.7% of men reporting that 0-3 pregnant women delivered their baby at home. Some women (16.8%) and men (16.9%) said they did not know how prevalent home births were in their communities. Similarly, women did not perceive post-natal care visits within two days of birth to be widespread in their communities. Over half (58.1%) reported that 0-3 pregnant women received a post-natal care visits. As with other norm questions, 20.2% of women said they did not know how prevalent receiving a post-natal care visits was within their communities.

Source of pregnancy information

Roughly one-third (33.5%) of women and 34.1% of men said they had no source of pregnancy information in the past six months. Four in ten women said they received pregnancy information from a health worker and one-fifth (20.7%) got information from the radio. The top sources of pregnancy information for men were health workers (31.4%) and the radio (20.0%).

Tables

Table 4.3. Knowledge, self-efficacy, and social norms as reported by women (15-49 years) or men (18-55 years) from Bangladesh, Ethiopia and Mali.

	Women			Men		
	Bangla-desh N=927	**Ethiopia N = 855**	**Mali N = 904**	**Bangla-desh N=927**	**Ethiopia N = 855**	**Mali N = 904**
	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)
Knows that pregnant women should go for 4 or more ANC visits	718 (77.5)	685 (80.1)		257 (55.2)	364 (84.3)	289 (63.5)
Knows the following danger signs during pregnancy and/or delivery						
Vaginal bleeding or discharge	352 (38.0)	670 (78.4)	162 (17.9)	80 (17.2)	288 (66.7)	61 (13.4)
Severe headaches, dizziness, blurred vision	522 (56.3)	357 (41.8)	243 (26.9)	269 (57.7)	136 (31.5)	86 (18.9)
Severe abdominal pain or contractions before 37 weeks	166 (17.9)	210 (24.6)	152 (16.8)	77 (16.5)	38 (8.8)	69 (15.2)
Extreme swelling of hands, feet, or face	331 (35.7)	312 (36.5)	189 (20.9)	136 (29.2)	52 (12.0)	51 (11.2)
Fever, chills, vomiting	630 (68.0)	399 (46.7)	356 (39.4)	250 (53.6)	142 (32.9)	189 (41.5)
Prolonged labor (12+ hours)	53 (5.7)	307 (35.9)	128 (14.2)	9 (1.9)	125 (28.9)	28 (6.2)
High blood pressure	128 (13.8)	255 (29.8)	105 (11.6)	46 (9.9)	63 (14.6)	63 (13.8)
Decreased/ absent fetal movement	46 (5.0)	291 (34.0)	80 (8.8)	10 (2.1)	70 (16.2)	12 (2.6)
Placenta not delivered within 1 hour post birth	14 (1.5)	200 (23.4)	8 (0.9)	3 (0.6)	118 (27.3)	2 (0.4)
Fast or difficult breathing	33 (3.6)	92 (10.8)	18 (2.0)	15 (3.2)	69 (16.0)	6 (1.3)
Mean number of dangers signs known	2.5 (1.2)	3.6 (1.7)	1.9 (1.4)	1.9 (1.6)	2.5 (1.8)	1.3 (1.1)
Self-efficacy						
High self-efficacy to go for ANC early	813 (87.7)	553 (64.7)	737 (81.5)	381 (81.8)	311 (72.0)	279 (83.3)
High self-efficacy to go for ≥ 4 ANC visits	815 (87.9)	620 (72.5)	765 (84.6)	376 (80.7)	355 (82.2)	
High self-efficacy to get husband/partner to accompany to ANC visits	758 (81.8)	446 (52.2)	720 (79.6)	345 (74.0)	173 (40.1)	
High self-efficacy to deliver in facility	779 (84.0)	634 (74.2)	815 (90.2)	358 (76.8)	351 (81.3)	
Bounded descriptive norms: Number of pregnant women out of 10 who start ANC in the first trimester						
0-3	201 (21.7)	206 (24.1)	251 (27.8)			
4-6	325 (35.1)	385 (45.0)	307 (34.0)			
7-10	401 (43.3	264 (30.9)	182 (20.1)			
Don't know			164 (18.1)			
Bounded descriptive norms: Number of pregnant women out of 10 who attended four or more ANC visits						
0-3	151 (16.3)	205 (24.0)	132 (14.6)	83 (17.8)	71 (16.4)	53 (11.7)
4-6	397 (42.8)	387 (45.3)	408 (45.1)	210 (45.1)	190 (44.0)	158 (34.7)
7-10	379 (40.9)	263 (30.8)	212 (23.5)	173 (37.1)	171 (39.6)	163 (35.8)
Don't know			152 (16.8)	83 (17.8)	71 (16.4)	81 (17.8)
Bounded descriptive norms: Number of pregnant women out of 10 who arrange for emergency transport for delivery						
0-3 4-6 7-10	543 (58.6) 178 (19.2) 206 (22.2)	339 (39.7) 220 (25.7) 296 (34.6)				
Bounded descriptive norms: Number of pregnant women out of 10 who save money to use later in case of an emergency						
0-3	317 (34.2)	425 (49.7)	357 (39.5)			
4-6	222 (24.0)	300 (35.1)	222 (24.6)			
7-10	388 (41.9)	130 (15.2)	96 (10.6)			
Don't know			229 (25.3)			
Bounded descriptive norms: Number of pregnant women out of 10 who experience complications during pregnancy						
0-3	709 (76.5)	723 (84.6)	349 (38.6)			
4-6	184 (19.9)	123 (14.4)	223 (24.7)			
7-10	34 (3.7)	9 (1.1)	81 (9.0)			
Don't know			251 (27.8)			
Bounded descriptive norms: Number of pregnant women out of 10 who delivered their last baby at home						
0-3	502 (54.2)	642 (75.1)	557 (61.6)	251 (53.9)	321 (74.3)	317 (69.7)
4-6	271 (29.2)	160 (18.7)	141 (15.6)	148 (31.8)	98 (22.7)	39 (8.6)
7-10	154 (16.6)	53 (6.2)	54 (6.0)	67 (14.4)	13 (3.0)	22 (4.8)
Don't know			152 (16.8)			77 (16.9)
Bounded descriptive norms: Number of pregnant women out of 10 who had a post-natal care visit within 2 days of birth						
0-3	660 (71.2)	642 (75.1)	525 (58.1)			
4-6	194 (20.9)	92 (10.7)	80 (8.9)			
7-10	73 (7.9)	121 (14.2)	116 (12.8)			
Don't know			183 (20.2)			
Bounded descriptive norms: Number of men with pregnant wives out of 10 who accompanied wife during ANC visits						
0-3				180 (38.6)	218 (50.5)	
4-6				200 (42.9)	171 (39.6)	
7-10				86 (18.5)	43 (10.0)	

Multivariate analysis: Determinants of early timing of ANC

Tables 4.4-4.6 show results of bivariate and multivariate models examining the determinants of early timing of ANC across study settings. In the following sections, we highlight key findings emerging from the final adjusted models fit for Bangladesh, Ethiopia, and Mali unless otherwise specified.

Bangladesh

In Bangladesh, the final multivariate model examining factors associated with timing of early ANC included:

- Parity
- Self-efficacy to start ANC early
- Maternal health knowledge
- Discriminatory gender norms: household responsibilities (domestic chores and daily life) domain[10]
- Household help
- Household decision-making: women's involvement

Among women of reproductive age in Bangladesh, parity, self-efficacy to start ANC early, and knowledge that women should attend at least four ANC visits were associated with an increased odds of starting ANC in the first trimester (OR: 1.32, 1.03, and 2.00, respectively; $p<0.01$, $p<0.001$, and $p<0.01$ respectively). As women's levels of decision-making increased so too did their odds of starting ANC early (95% CI: 1.07-1.21; $p<0.001$). There are two findings that warrant further research. First, the odds of starting ANC early decreased by 39% for women with medium support for more discriminatory gender norms relating to domestic chores and daily life as compared to women with low support of these norms (95% CI: 0.34-0.75; $p<0.001$). Second, the odds of starting ANC early decreased by 47% for women who reported having a child help with housework during their pregnancy as compared to those who received no help from children (95% CI: 0.31-0.89; $p<0.05$).

Ethiopia

In Ethiopia, the final multivariate model examining factors associated with timing of early ANC included:

- Place of ANC
- Self-efficacy to start ANC early
- Social norm related to early ANC
- Discriminatory gender norms: household responsibilities (domestic chores and daily life) domain[11]

In Ethiopia, women of reproductive age who received ANC in a government facility had an increased odds of starting ANC in the first trimester as compared to women who received ANC from non-governmental facilities (95% CI: 1.04-2.40; $p<0.05$). For every one-unit increase in self-efficacy to start ANC early, the odds of a woman starting ANC in the first trimester increased 2.2 times (95% CI: 1.89-2.57; $p<0.001$). Women who perceived starting ANC early to be widespread in their community (i.e. they perceived seven to ten pregnant women– out of ten – in their community started ANC early) had a 1.56 increase in the odds of starting ANC within the first trimester as compared to women who did not perceive this to be common (i.e. said only 0-3 pregnant started ANC early in their communities) (95% CI:

[10] See Chapter 6 for a more detailed description.
[11] See Chapter 6 for a more detailed description.

1.02-2.39; p<0.05). Finally, as women's support for discriminatory gender norms relating to domestic chores and daily life increased, the odds of starting ANC early decreased. For every one-unit increase in support for more discriminatory gender norms (i.e. one move from agree to strongly agree) related to such household responsibilities, there was an associated decrease of 8% in the odds of starting ANC early (95% CI: 0.88-0.97).

Mali

In Mali, the final multivariate model examining factors associated with timing of early ANC included:

- Household wealth
- Knowledge of complications or danger signs during pregnancy
- Self-efficacy to start ANC early
- Social norm related to early ANC
- Discriminatory gender norms: Aggregated set of norms across four domains
- Workload during pregnancy
- Social media use

In Mali, the odds of a women of reproductive age starting ANC in the first trimester increased 1.80 times for those in the middle wealth tercile and 1.95 times for those in the highest wealth terciles as compared to women from the lowest wealth tercile (p<0.01). Relatedly, women who had used social media before were 1.7 times as likely to start ANC early as compared to women who had never used social media (95% CI: 1.06-2.82; p<0.05). As self-efficacy to start ANC early increased, the odds of starting ANC in the first trimester increased 3.18 times (95% CI: 2.40-4.22; p<0.001). Women who had heard about complications or dangers signs in pregnancy were 2 times as likely to start ANC in the first trimester as compared to those who had not (p<0.001). Similarly, those who perceived starting ANC in the first trimester as the norm in their community had an increased odds of starting ANC early themselves (AOR: 1.18; 95% CI: 1.10-1.26; p<0.001). The odds of women starting ANC early decreased by 45% for women who reported having a medium workload during pregnancy and 56% for women with a high workload during pregnancy (as compared to women with a light workload during pregnancy; p<0.001). Finally, medium or strong support for more discriminatory gender norms (an aggregate measure of all four domains: violence, sexual relationships, reproductive health, and household responsibilities) was associated with a 38% and 39% reduction in the odds of starting ANC early respectively as compared to women who reported low support for such discriminatory gender norms (95% CI: 0.42-0.91; p<0.05).

Tables

Table 4.4. Determinants of early timing of ANC among women of reproductive age in Bangladesh.

Covariates (Bangladesh)	Unadjusted OR	Adjusted OR
Parity (continuous)	1.18*	1.32**
	(1.01-1.38)	(1.10 - 1.59)
Self-efficacy to start ANC early (continuous)	1.03***	1.03***
	(1.02-1.04)	(1.02 - 1.04)
Knew pregnant women should attend at least four ANC visits (Ref: Did not know)	2.33***	2.00**
	(1.54-3.52)	(1.28 - 3.11)
Discriminatory gender norms: Household responsibilities (domestic chores and daily life) domain (Ref: Less support)		
Medium support	0.37***	0.50***
	(0.26-0.54)	(0.34 - 0.75)
High support	0.66*	0.85
	(0.46-0.94)	(0.57 - 1.25)
Had help with housework during pregnancy from a child (Ref: Received no help from a child or did not have a child)	0.63*	0.53*
	(0.40-0.99)	(0.31 - 0.89)
Women's decision-making index (continuous)	1.16***	1.14***
	(1.1-1.23)	(1.07 - 1.21)
Pseudo R-squared		0.1253
AIC/BIC		939.7/978.4
Observations		927

Significant differences denoted as follows *** p<0.001, ** p<0.01, * p<0.05, ^ p<0.1

Table 4.5. Determinants of early timing of ANC among women of reproductive age in Ethiopia

Covariates (Ethiopia)	Unadjusted OR	Adjusted OR
Received ANC in a government facility (Ref: Received ANC elsewhere)	2.11***	1.58*
	(1.46-3.07)	(1.04 - 2.40)
Self-efficacy to start ANC early (continuous)	2.30***	2.20***
	(1.97-2.68)	(1.89 - 2.57)
Bounded descriptive norm: Number of pregnant women out of 10 who start ANC (Ref: Low: 0-3)		
Medium: 4-6	1.52*	1.21
	(1.09-2.17)	(0.81 - 1.79)
High: 7-10	2.08***	1.56*
	(1.42-3.03)	(1.02 - 2.39)
Discriminatory gender norms: Household responsibilities (domestic chores and daily life) domain[1] (continuous)	0.91***	0.92***
	(0.88-0.95)	(0.88 - 0.97)
Pseudo-r2		0.1490
AIC/BIC		1003.6 /1032.1
Observations		855

Significant differences denoted as follows *** p<0.001, ** p<0.01, * p<0.05, ^p<0.1

[1] Higher scores suggest higher/stronger support of discriminatory gender norms related to household responsibilities (domestic chores and daily life).

Table 4.6. Determinants of early timing of ANC among women of reproductive age in Mali

Covariates	Unadjusted OR	Adjusted OR
Wealth terciles[1] (Ref: Lowest)		
Middle	1.75**	1.80**
	(1.23-2.50)	(1.20 - 2.69)
Highest	3.16***	1.95**
	(2.25-4.44)	(1.30 - 2.93)
Heard about complications or danger signs in pregnancy (Ref: No exposure)	2.21***	1.96***
	(1.67,2.92)	(1.42 - 2.71)
Self-efficacy to start ANC early (continuous)	3.61***	3.18***
	(2.79-4.67)	(2.40 - 4.22)
Bounded descriptive norm: Number of pregnant women out of 10 who start ANC early (continuous)	1.23***	1.18***
	(1.16-1.31)	(1.10 - 1.26)
Aggregated discriminatory gender norms (categorical) (Ref: Less support)		
Medium support	0.55***	0.62*
	(0.40-0.76)	(0.42 - 0.91)
High support	0.66*	0.61*
	(0.47-0.92)	(0.41 - 0.91)
Workload during a typical day in pregnancy index (Ref: Low)		
Medium workload	0.48***	0.55***
	(0.36-0.65)	(0.39 - 0.79)
High workload	0.43***	0.44***
	(0.28-0.65)	(0.27 - 0.70)
Has used social media before (Ref: Never used)	3.72***	1.73*
	(2.46-5.62)	(1.06 - 2.82)
Pseudo-r2		21.69
AIC/BIC		935.0/988.7
Observations		895

Significant differences denoted as follows *** p<0.001, ** p<0.01, * p<0.05

[1]Wealth terciles determined using principal component analysis and stratified by urban and rural residence

Multivariate analysis: Determinants of attending at least four ANC visits during last pregnancy

Tables 4.7-4.9 show results of bivariate and multivariate models examining the determinants of attending at least four ANC visits during one's last pregnancy across study settings. In the following sections, we highlight key findings emerging from the final adjusted models fit for Bangladesh, Ethiopia, and Mali unless otherwise specified.

Bangladesh

In Bangladesh, the final multivariate model examining factors associated with attending at least four ANC visits included:

- Early timing of ANC
- Sources of pregnancy information,
- Self-efficacy to attend at least four ANC visits
- Maternal health knowledge
- Morbidity during pregnancy: Receipt/purchase of iron supplements
- Workload during pregnancy: weighted heavy workload index
- Bounded descriptive norms: stress in the household
- Household help
- Household decision-making: men's involvement

- Exposure to television

In Bangladesh, the odds of a woman of reproductive age attending at least four ANC visits increased 3.54 times if she started ANC early (95% CI: 2.43 - 5.17; p<0.001) and increased 2.67 times (95% CI: 1.80-3.96; p<0.001) if she knew that women should attend at least four ANC check-ups. It is important to consider that women who started ANC early may have had more time to complete the recommended minimum ANC visits and/or may have had greater awareness of the need to complete at least four ANC visits. Having sources of pregnancy information also increased the odds of attending four or more ANC visits by 1.65 for those with one source (95% CI: 1.15-2.37; p<0.01), 1.89 for those with two (95% CI: 1.25-2.84; p<0.01), and 3.67 for those with three or more sources (95% CI: 1.86-7.24; p<0.001) (as compared to those with no sources of pregnancy information). In addition, women who reported watching television at least once a week had an increased odds of attending four or more ANC visits as compared to women who did not watch television weekly (AOR: 1.53; 95% CI: 1.12–2.10; p<0.01).

As self-efficacy to attend four or more ANC visits increased, the odds of attending at least four visits increased 1.02 times (95% CI: 1.01-1.03; p<0.001). Women who received or bought iron tablets or syrup during pregnancy had a 2-fold increase in the odds of attending four or more ANC visits (AOR: 2.03; 95% CI: 1.26-3.25; p<0.01). Women's heavy workloads emerged as an important determinant to optimal ANC with the odds of attending four or more visits decreasing by 32% for women with a medium "heavy" workload (95% CI: 0.48-0.98; p<0.05) and 39% for women with a high "heavy" workload (95% CI: 0.41-0.90; p<0.05) based on the number of tasks engaged in that she considered physically difficult. Moderate levels of male dominated decision-making were associated with a 38% reduction in the odds of attending four or more ANC visits as compared to women who reported low levels of male dominated decision-making in their household (95% CI: 0.44-0.88; p<0.01). Two findings merit further study: As women's perceptions of experiencing stress in the household increased (i.e. more pregnant women out of 10 were perceived to experience stress in the household), the odds of attending at least four ANC visits increased (AOR: 1.18; 95% CI: 1.09–1.28; p<0.001). It is also unclear why women who reported having a sibling assist with the housework during pregnancy would have a 57% reduction in the odds of attending four or more ANC visits (95% CI: 0.24-0.79; p<0.01).

Ethiopia

In Ethiopia, the final multivariate model examining factors associated with attending at least four ANC visits included:

- Early timing of ANC
- Receipt of ANC in a government facility
- Sources of pregnancy information
- Self-efficacy to start ANC early, attend at least four ANC visits, and have spouse/partner attend ANC visits
- Maternal health knowledge
- Bounded descriptive norms: at least four ANC visits
- Morbidity during pregnancy: HIV test
- Workload: household workload index (categorical)

In Ethiopia, women who started ANC in the first trimester has a 6-fold increase in the odds of attending at least four ANC visits during their pregnancy (AOR: 6.83; 95% CI: 4.61 - 10.11; p<0.001). It is important to consider that women who started ANC early may have had more

time to complete the recommended minimum ANC visits and/or may have had greater awareness of the need to complete at least four ANC visits. Women who knew that pregnant women should go for at least four ANC visits were also 2.7 times more likely to attend four or more ANC visits (95% CI: 1.71 - 4.25; p<0.001). As self-efficacy to start ANC early and self-efficacy to attend at least four ANC visits increased, so too did the odds of attending four or more ANC check-ups (AOR: 1.27 and 2.01, respectively; 95% CI: 1.05 - 1.54 and 1.59 - 2.53, respectively; p<0.05 and p<0.001, respectively). In contrast, as self-efficacy to get a spouse/partner to attend the ANC visits increased, the odds of actually going for at least four ANC visits decreased by 16% (95% CI: 0.72 - 0.99; p<0.05). Additional research is needed to better understand this relationship. Women who perceived attending four or more ANC visits to be the norm in their community had an increased odds of attending four or more visits themselves (AOR: 1.09; 95% CI: 1.01-1.18; p<0.05). The odds of attending four or more ANC visits increased 1.89 times (95% CI: 1.17 - 3.05; p<0.01) among women who were tested for HIV during their pregnancy as compared to those who were not tested. Lastly, women with medium workloads were 44% less likely to attend four or more ANC visits as compared to women with light workloads (95% CI: 0.38-0.83; p<0.01).

Mali

In Mali, the final multivariate model examining factors associated with attending at least four ANC visits included:

- Early timing of ANC
- Sources of pregnancy information
- Self-efficacy to attend at least four ANC visits
- Maternal health knowledge
- Morbidity during pregnancy: duration of iron supplement intake
- Couple communication: ANC
- Bounded descriptive norms: early timing of ANC and at least four ANC visits
- Workload in pregnancy: Heavy workload index
- Discriminatory gender norms: Aggregated set of norms across four domains
- Exposure: Health worker visits

In Mali, women who started ANC early had a 6-fold increase in the odds of attending four or more ANC visits during their pregnancy (AOR: 6.8; 95% CI: 4.53-10.21; p<0.001). It is important to consider that women who started ANC early may have had more time to complete the recommended minimum ANC visits and/or may have had greater awareness of the need to complete at least four ANC visits. Interestingly, women who perceived early timing of ANC to be the norm was associated with an 12% reduction in the odds of attending four or more ANC visits (95% CI: 0.81-0.97; p<0.01). Meanwhile, women who perceived attending at least four ANC visits to be the norm had 1.27 times odds attending four or more ANC visits as compared to women who did not perceive this behavior to be normative (95% CI: 1.14-1.41; p<0.001). As self-efficacy to attend at least four ANC check-ups increased, so too did the odds of a woman attending at least four check-ups (AOR: 2.57; 95% CI: 1.94-3.41; p<0.001). Women who took iron tablets for more than 90 days had a 5-fold increase in the odds of attending at least four ANC check-ups as compared to women who did not take iron supplements (95% CI: 2.89-9.12; p<0.001). Women who take iron tablets for longer may have greater health-seeking behavior and may be more likely to follow other health recommendations such as going for multiple ANC visits as compared to other women.

Women who had high levels of a heavy workload also had a 46% reduction in the odds of attending at least four ANC check-ups (95% CI: 0.36-0.83; p<0.01). Exposure to certain

information or individuals also emerged as key determinants of optimal ANC in Mali. Women who heard about complications or danger signs in pregnancy had 1.80 increase in the odds of attending at least four ANC visits (95% CI: 1.24-2.61; p<0.01). For every additional health worker visit a woman received, the odds of attending at least four ANC visits increased 1.08 times (95% CI: 1.00-1.16; p<0.05). Interestingly, women who reported having 2 sources of pregnancy information had a 52% reduction in the odds of attending four or more ANC visits as compared to women with no sources of such information (95%: 0.28-1.02; p<0.01). This finding merits further investigation. Finally, greater support of more discriminatory gender norms (the full aggregated set of norms across four domains: violence, sexual relationships, reproductive health, and household responsibilities) decreased the odds of optimal ANC by 3% (95% CI: 0.95 - 0.99; p<0.01).

Tables

Table 4.7. Determinants of receiving four or more ANC visits among women of reproductive age in Bangladesh

Covariates (Bangladesh)	Unadjusted OR	Adjusted OR
Started ANC early (Ref: Did not start ANC early)	4.63***	3.54***
	(3.31-6.49)	(2.43 - 5.17)
Sources of pregnancy information (Ref: None)		
1 source	1.45*	1.65**
	(1.06-1.98)	(1.15 - 2.37)
2 sources	2.71***	1.89**
	(1.90-3.87)	(1.25 - 2.84)
3 or more sources	4.59***	3.67***
	(2.55-8.25)	(1.86 - 7.24)
Knew that pregnant women should attend at least four ANC visits (Ref: Did not know)	3.86***	2.67***
	(2.74-5.43)	(1.80 - 3.96)
Self-efficacy to attend at least four ANC visits (continuous)	1.02***	1.02***
	(1.02-1.03)	(1.01 - 1.03)
Received or bought iron supplements during pregnancy (Ref: Did not receive/buy iron supplements)	1.93***	2.03**
	(1.32-2.83)	(1.26 - 3.25)
Heavy workload index[1] (weighted) (Ref: Low)		
Medium (2)	0.87	0.68*
	(0.64-1.18)	(0.48 - 0.98)
High (3-9)	0.74	0.61*
	(0.53-1.03)	(0.41 - 0.90)
Sibling helped with housework during pregnancy (Ref: Received no help from sibling or had no sibling)	0.55*	0.43**
	(0.33-0.91)	(0.24 - 0.79)
Men's decision-making (Ref: Low)		
Medium	0.55***	0.62**
	(0.41-0.73)	(0.44 - 0.88)
High	1.15	1.52^
	(0.77-1.72)	(0.93 - 2.48)
Bounded descriptive norm: number of pregnant women out of 10 who experience stress in the house (continuous)	1.10**	1.18***
	(1.03-1.18)	(1.09 - 1.28)
Watches television at least once a week (Ref: No exposure)	1.85***	1.53**
	(1.41-2.43)	(1.12 - 2.10)
Pseudo-R2		0.1993
AIC/BIC		1024.5 /1096.5
Observations		896

Significant differences denoted as follows *** p<0.001, ** p<0.01, * p<0.05

[1]Weighted based on whether the woman thinks the activity is physically difficult

Table 4.8. Determinants of receiving four or more ANC visits among women of reproductive age in Ethiopia

Covariates	Unadjusted OR	Adjusted OR
Started ANC in the first trimester (Ref: Started ANC after first trimester)	9.22***	6.83***
	(6.54-13.0)	(4.61 - 10.11)
Received ANC in a government facility (Ref: Received ANC elsewhere)	1.58**	0.71
	(1.12-2.22)	(0.43 - 1.16)
Knew that pregnant women should receive at least four ANC visits (Ref: Did not know)	4.44***	2.70***
	(3.09-6.39)	(1.71 - 4.25)
Self-efficacy to start ANC early (continuous)	2.29***	1.27*
	(1.99-2.63)	(1.05 - 1.54)
Self-efficacy to attend at least four ANC visits (continuous)	2.80***	2.01***
	(2.37-3.31)	(1.59 - 2.53)
Self-efficacy to get spouse/partner to accompany ANC visits (continuous)	1.20***	0.84*
	(1.08-1.34)	(0.72 - 0.99)
Bounded descriptive norm: Number of pregnant women out of 10 who receive four or more ANC visits (continuous)	1.20***	1.09*
	(1.14-1.27)	(1.01 - 1.18)
Was tested for HIV during pregnancy (Ref: Not tested)	2.27***	1.89**
	(1.63-3.17)	(1.17 - 3.05)
Workload index (categorical) (Ref: Low)		
Medium workload	0.68*	0.56**
	(0.50-0.93)	(0.38 - 0.83)
High workload	0.86	1.00
	(0.59-1.25)	(0.62 - 1.63)
Pseudo-R2		0.3259
AIC/BIC		804.3/856.6
Observations		855

Significant differences denoted as follows *** p<0.001, ** p<0.01, * p<0.05

Table 4.9. Determinants of receiving four or more ANC visits among women of reproductive age in Mali

Covariates (Mali)	Unadjusted OR	Adjusted OR
Started ANC in the first trimester (Ref: Started after first trimester)	9.13***	6.80***
	(6.48-12.9)	(4.53 - 10.21)
Heard about complications/danger signs in pregnancy (Ref: No exposure)	2.43***	1.80**
	(1.84-3.20)	(1.24 - 2.61)
Sources of pregnancy information (Ref: None)		
1 source	1.50*	0.60*
	(1.10-2.05)	(0.38 - 0.94)
2 sources	1.29	0.48**
	(0.89-1.89)	(0.28 - 0.82)
3 or more sources	1.62*	0.53^
	(1.02-2.57)	(0.28 - 1.02)
Self-efficacy to attend at least four ANC visits (continuous)	4.02***	2.57***
	(3.20-5.07)	(1.94 - 3.41)
Bounded descriptive norm: Number of pregnant women out of 10 who started ANC in the first trimester (continuous)	1.11***	0.88**
	(1.05-1.18)	(0.81 - 0.97)
Bounded descriptive norm: Number of pregnant women out of 10 who attended four or more ANC visits (continuous)	1.26***	1.27***
	(1.18-1.35)	(1.14 - 1.41)
Number of days took iron tablets/syrup during pregnancy (Ref: None)		
Less than 60 days	4.16***	2.17*
	(2.50-6.93)	(1.14 - 4.11)
60-89 days	4.83***	2.09*
	(2.83-8.26)	(1.08 - 4.06)
More than 90 days	13.07***	5.14***
	(8.29-20.6)	(2.89 - 9.12)
High couple communication about ANC (Ref: Low couple communication)	2.64***	1.61*
	(2.01-3.47)	(1.10 - 2.37)
Aggregated discriminatory gender norms (continuous) [1]	0.98***	0.97**
	(0.96-0.99)	(0.95 - 0.99)
Heavy workload during pregnancy index (Ref: Low: 0-2)		
Medium (3)	0.69*	0.83
	(0.50-0.96)	(0.54 - 1.28)
High (4-5)	0.46***	0.54**
	(0.33-0.63)	(0.36 - 0.83)
Number of health worker visits received (continuous)	1.06	1.08*
	(0.99-1.14)	(1.00 - 1.16)
Pseudo-R squared		0.3588
AIC/BIC		820.2/901.6
Observations		888

Significant differences denoted as follows *** p<0.001, ** p<0.01, * p<0.05, ^p<0.1

[1] Higher scores suggest higher or stronger support of discriminatory gender norms.

Multivariate analysis: Determinants of giving birth in a health facility for most recent birth

Tables 4.10-4.12 show results of bivariate and multivariate models examining the determinants of giving birth in a health facility for the most recent birth across study settings. In the following sections, we highlight key findings emerging from the final adjusted models fit for Bangladesh, Ethiopia, and Mali unless otherwise specified.

Bangladesh

In Bangladesh, the final multivariate model examining factors associated with giving birth in a health facility included:

- Age when first child was born
- Attended at least four ANC visits
- Pregnancy and birth experiences: Birth preparedness, birth complications, and referral services
- Sources of pregnancy information
- Self-efficacy to attend at least four ANC visits
- Maternal health knowledge
- Bounded descriptive norms: home birth
- Household help

In Bangladesh, women who had their first child at an older age had 1.16 times of giving birth in a facility as compared to younger mothers (95%: 1.09 - 1.25; $p<0.001$). Attending at least four or more ANC visits was associated with a 1.54 increase in the odds of a facility birth as compared to women who did not go for at least four ANC visits (95% CI: 1.08 - 2.20; $p<0.05$) . For each additional birth preparedness action a woman took, the odds of her delivering in a health facility increased 1.17 times (95% CI: 1.05 - 1.30; $p<0.01$). Women who experienced a birth complication and were referred somewhere for it had 10 times the odds of delivering in a health facility as compared to women who did not experience any birth complications during pregnancy (95% CI: 3.66 - 28.04; $p<0.001$). Exposure to information proved to be an important determinant of facility birth. For instance, the odds of delivering in a health facility increased by 1.66 for women who had one and two sources of pregnancy information as compared to women who had no sources of information (95% CI: 1.11 - 2.49 and 1.02 - 2.70, respectively; $p<0.05$ for both). Moreover, for each additional danger sign during pregnancy and/or birth a woman could name the odds of her having a facility birth increased 1.2 times (95% CI: 1.02 - 1.40; $p<0.05$). As self-efficacy to give birth in a health facility increased, so too did the odds of giving birth in a health facility (AOR: 1.03; 95%: 1.02 - 1.03; $p<0.001$), however women who perceived facility births to be the norm were 21% less likely to give birth in a health facility (95% CI: 0.73 - 0.85; $p<0.001$). Finally, as with previous models, it is unclear why the odds of a facility birth decrease by 69% among women who reported receiving help from a sibling with managing housework as compared to women who did not receive any help from a sibling (95% CI: 0.17 - 0.58; $p<0.001$).

Ethiopia

In Ethiopia, the final multivariate model examining factors associated with giving birth in a health facility included:

- Vulnerability index
- Parity
- ANC health services: government facility and distance to health facility
- Attended at least four ANC visits
- Pregnancy and birth experiences: birth complications
- Self-efficacy: to deliver in a health facility
- Bounded descriptive norms: home birth
- Discriminatory gender norms: Sexual relationships
- Household decision-making: women's involvement

In Ethiopia, the odds of a woman giving birth in a health facility decreased by 38% among women who are considered to be highly vulnerable (95% CI: 0.40 - 0.94; p<0.05). Women with higher parity had a decreased odds of giving birth in a health facility. Women with five or more children were 45% less likely to deliver in a health facility as compared to women with 0-2 children (95% CI: 0.33 - 0.86; p<0.01). Women who received ANC from a government facility had a 2-fold increase in the odds of giving birth in a health facility as compared to women who received ANC from non-governmental facilities (95% CI: 1.57 - 3.75; p<0.001). Interestingly, distance to a health facility was not a significant determinant of facility birth in Ethiopia. For every additional birth complication a woman experienced, her odds of delivering in a health facility increased 1.26 times (95% CI: 1.14 - 1.40; p<0.001). Self-efficacy to deliver at a health facility was associated with a 2-fold increase in the odds of a facility birth (95% CI: 1.79 - 2.52; p<0.001) and as women perceived home births to be more normative, the odds of a facility birth decreased by 17% (95% CI: 0.76 - 0.90; p<0.001). Greater support for more discriminatory gender norms regarding sexual relationships was associated with a 8% decrease in the odds of giving birth in a facility (95% CI: 0.88 - 0.95; p<0.001). Women's decision-making was not a significant determinant of facility birth.

Mali

In Mali, the final multivariate model examining factors associated with giving birth in a health facility included:

- Wealth index
- Attended at least four ANC visits
- Pregnancy and birth experiences: birth preparedness and birth complications
- Maternal health knowledge
- Self-efficacy: to get spouse/partner to attend ANC visits and deliver in a health facility
- Couple communication: where to give birth
- Discriminatory gender norms: household responsibilities (domestic chores and daily life) domain
- Discriminatory gender norms related to CEFM
- Household help

In Mali, the odds of a women from the fourth wealth quintile giving birth in a health facility were decreased by 58% as compared to women from the lowest wealth quintile (95% CI: 0.20 - 0.89; p<0.05). Certain actions or events in pregnancy emerged as important determinants of facility births. For every additional birth preparedness action a woman undertook, the odds of her giving birth in a health facility increased by 1.49 (95% CI: 1.19 - 1.86; p<0.001). Women who experienced obstructed or prolonged labor had a 2-fold increase in the odds of giving birth in a health facility (95% CI: 1.05 - 5.67; p<0.05). Women who were looked after the by family members during pregnancy also had a roughly 2-fold increase in odds of delivering in a health facility (95% CI: 1.07 - 3.46; p<0.05). As self-efficacy to deliver in a health facility increased, the odds of a woman delivering in a health facility increased 7.9 odds (95% CI: 5.15 - 12.17; p<0.001). Curiously, as women's confidence in their ability to get their husband/partner to attend ANC visits increased, the odds of delivering in a health facility decreased by 52%, something worth exploring in future research (95% CI: 0.32 - 0.71; p<0.001). The odds of delivering in a health facility decreased by 58% for women with high or strong support for discriminatory gender norms related to household responsibilities (95% CI: 0.23 - 0.76; p<0.05) and by 53% for those with medium

support for discriminatory marriage norms as compared to those reporting less support for such discriminatory gender norms (95% CI:0.24 - 0.92; p<0.05).

Tables

Table 4.10. Determinants of delivering in a health facility among women of reproductive age in Bangladesh

Covariates	Unadjusted OR	Adjusted OR
Woman's age when first child was born (continuous)	1.13***	1.16***
	(1.07-1.20)	(1.09 - 1.25)
Attended 4 or more ANC visits (Ref: Attended less than 4 ANC visits)	2.58***	1.54*
	(1.92-3.47)	(1.08 - 2.20)
Number of birth preparedness actions taken (continuous, 0-5)	1.36***	1.17**
	(1.24-1.48)	(1.05 - 1.30)
Sources of pregnancy information (Ref: 0)		
1 source	1.87***	1.66*
	(1.33-2.62)	(1.11 - 2.49)
2 sources	2.84***	1.66*
	(1.88-4.30)	(1.02 - 2.70)
3 or more sources	3.03***	1.42
	(1.57-5.84)	(0.66 - 3.05)
Number of birth complications (continuous)	1.294	0.82
	(1.08-1.55)	(0.57 - 1.19)
Referred anywhere for birth complications (Ref: Had no complications)		
Had a birth complication but was not referred anywhere	1.165	1.65
	(0.85-1.60)	(0.86 - 3.18)
Had a birth complication and was referred somewhere	7.50***	10.13***
	(3.58-15.7)	(3.66 - 28.04)
Number of danger signs of pregnancy and/or complications known (continuous)	1.17*	1.20*
	(1.03-1.32)	(1.02 - 1.40)
Self-efficacy to delivery in a health facility (continuous)	1.03***	1.03***
	(1.03-1.03)	(1.02 - 1.03)
Bounded descriptive norm: number of pregnant women who have a home birth (continuous)	0.78***	0.79***
	(0.74-0.83)	(0.73 - 0.85)
Sibling helped with housework during pregnancy (Ref: Received no help)	0.44**	0.31***
	(0.27-0.73)	(0.17 - 0.58)
Pseudo R-squared		26.23
AIC/BIC		846.4/914.0
Observations		927

Significant differences denoted as follows *** p<0.001, ** p<0.01, * p<0.05

Table 4.11. Determinants of delivering in a health facility among women of reproductive age in Ethiopia

Covariates	Unadjusted OR	Adjusted OR
High vulnerability index (Ref: Low vulnerability)	0.53***	0.62*
	(0.39-0.72)	(0.40 - 0.94)
Parity (Ref: 0-2 children)		
3-4 children	0.47***	0.75
	(0.32-0.70)	(0.47 - 1.19)
5 or more children	0.32***	0.54**
	(0.22-0.48)	(0.33 - 0.86)
Received ANC in a government facility (Ref: Received ANC elsewhere)	3.34***	2.42***
	(2.33-4.78)	(1.57 - 3.75)
Number of birth complications experienced (continuous)	1.19***	1.26***
	(1.09-1.29)	(1.14 - 1.40)
Distance from the health facility in kilometers (continuous)	0.93*	0.96
	(0.87-0.98)	(0.89 - 1.04)
Self-efficacy to deliver at a health facility (continuous)	2.21***	2.12***
	(1.90-2.56)	(1.79 - 2.52)
Bounded descriptive norm: Number of pregnant women out of 10 who have a home birth (continuous)	0.75***	0.83***
	(0.70-0.80)	(0.76 - 0.90)
Discriminatory gender norms: Sexual Relationships domain (Continuous)	0.92***	0.92***
	(0.89-0.95)	(0.88 - 0.95)
Women's decision-making score (continuous)	0.90**	0.91
	(0.84-0.97)	(0.82 - 1.00)
Pseudo R-squared		26.56
AIC/BIC		724.7/776.8
Observations		844

Significant differences denoted as follows *** p<0.001, ** p<0.01, * p<0.05

Table 4.12. Determinants of delivering in a health facility among women of reproductive age in Mali

Covariates	Unadjusted OR	Adjusted OR
Wealth quintiles[1] (Ref: Lowest)		
Second	0.63	0.52
	(0.36-1.13)	(0.24 - 1.12)
Middle	1.19	1.05
	(0.63-2.25)	(0.45 - 2.42)
Fourth	0.68	0.42*
	(0.38-1.22)	(0.20 - 0.89)
Highest	4.970**	1.54
	(1.85-13.3)	(0.45 - 5.25)
Number of birth preparedness actions (continuous, 0-5)	2.10***	1.49***
	(1.72-2.56)	(1.19 - 1.86)
Experienced obstructed/prolonged labor (Ref: Did not experience)	2.17*	2.45*
	(1.14-4.15)	(1.05 - 5.67)
Number of danger signs of pregnancy and/or delivery known (continuous)	1.17*	0.77*
	(1.00-1.36)	(0.63 - 0.96)
Self-efficacy to get spouse/partner to go to ANC visits (continuous)	1.85***	0.48***
	(1.54-2.22)	(0.32 - 0.71)
Self-efficacy to deliver in a health facility (continuous)	5.50***	7.92***
	(4.21-7.20)	(5.15 - 12.17)
Couple communication about where to give birth (continuous)	1.54***	1.17
	(1.26-1.88)	(0.87 - 1.57)
Discriminatory gender norms: Household responsibilities (domestic chores and daily life) domain (Ref: Less support)[2]		
Medium support	0.52**	0.42**
	(0.33-0.82)	(0.23 - 0.76)
Discriminatory gender norms: Related to CEFM Ref: Less support)		
Medium support	0.60*	0.47*
	(0.37-0.99)	(0.24 - 0.92)
High support	0.65	0.79
	(0.39-1.08)	(0.39 - 1.58)
Woman looked after by family during pregnancy (Ref: Low)	2.25***	1.92*
	(1.49-3.39)	(1.07 - 3.46)
Pseudo R-squared		41.57
AIC/BIC		419.9/491.9
Observations		896

Significant differences denoted as follows *** p<0.001, ** p<0.01, * p<0.05

[1] Wealth quintiles determined using principal component analysis stratifying urban and rural dwellers.

[2] The distribution of responses in Mali were spread over two categories: low and medium support for such discriminatory gender norms.

Chapter Five: Risk factors of preterm birth

Chapter Five describes the main risk factors of self-reported preterm birth (PTB) from the three household surveys with women (15-49 years) with a child under two years in Bangladesh, Ethiopia, and Mali. In addition to preterm birth, this chapter also examines low birth weight based on mother's self report of their child's birthweight. This chapter examines perceived causes of PTB among women, men, and adolescents.

PTB prevalence and mothers' perceptions of baby size

Self-reported PTB prevalence among women's most recent pregnancies was low in all three countries. Prevalence was 2.7% in Bangladesh, 4.2% in Ethiopia, and 1.9% in Mali (just 17 cases).[12] The measurement of preterm birth described in this chapter is based on the self-report of mothers to the question, "Was your baby born early, before 37 weeks?" Self-reported birth weight and perceived size of newborns were also documented, which are both measures used to indicate small or vulnerable babies.

Table 5.1 shows both self-reported PTB as well as perceptions of baby size (e.g. very small, small, etc.) among participants. Table 5.1 shows that mothers in Mali had the lowest proportion of very small babies (1%), while those in Ethiopia had the highest (8%). Women in Ethiopia reported the largest percentage of small babies (24%), followed by Mali (11%) and Bangladesh (10%).

According to women interviewed, about three-fourths of the Bangladeshi babies and less than half the Ethiopian babies were weighed at birth. Mali had the highest prevalence of children born in the last two years who were classified as low birth weight (10%), followed by Bangladesh (9%) and then Ethiopia (8%). About 25% of preterm births occur at home in both Bangladesh and Ethiopia. However, 42 percent of births rated by mothers as "very small size" took place at home in Ethiopia (25% in Bangladesh).

[12] Please note that due to enumerator notes collected during data collection, there was a bug in the Mali app for some enumerators that led to certain preterm birth data not being recorded. As a result, there is significant missingness for these variables.

Tables

Table 5.1. Self-reported PTB and mothers' perceptions of baby size

	Women		
Preterm Birth	Bangladesh N= 925	Ethiopia N=830	Mali N=904
	n (%)	n (%)	n (%)
Self-reported PTB Was your baby born:			
Early (< 37 weeks)	25 (2.7)	35 (4.2)	17 (1.9)
On time	900 (97.3)	795 (92.9)	805 (89.6)
Don't know	--	25 (2.9)	76 (8.4)
Baby size at birth (mothers' perception)			
Very small	24 (2.5)	68 (8.4)	8 (1.1)
Small	101 (10.9)	197 (24.4)	77 (11.2)
Normal	704 (76.0)	451 (55.8)	467 (68.2)
Big	97 (10.4)	92 (11.4)	132 (19.2)
Weighed at birth			
Not weighed	187 (20.1)	315 (36.8)	--
Weighed	714 (77.0)	381 (44.5)	--
Don't remember	26 (2.8)	159 (18.6)	--
Birth Weight of newborn			
< 2.5 kg	67 (9.3)	32 (8.4)	89 (10.5)
≥2.5 kg	645 (90.3)	211 (55.3)	330 (39.1)
Don't know	2 (0.2)	587 (36.7)	417 (49.5)
Place of birth for PTB & Very small size newborns			
Self-reported PTB home births	6 (24)	8 (25)	0
Self-reported very small size home births	6 (25)	29 (42)	0

Perceived causes of PTB

Tables 5.2 and 5.3 show perceived causes of PTB among women, men, and adolescents.

Women

Table 5.2 shows women's and men's knowledge of the causes of PTB across settings. The vast majority of Ethiopian women stated that excessive workload was the cause of PTB, while only a third of Malian women were of the same opinion. While more than half of the women from Bangladesh rated nutrition as a cause of PTB, a third of the Ethiopians and only 15% of women from Mali thought similarly. Not attending ANC services was also not perceived as a cause of PTB, with a third of women from Mali and Ethiopia and only 4 percent of Bangladeshi women stating it as a cause of PTB.

Early marriage, short birth spacing, RTIs, and STIs had 10% or fewer women stating that they were causes of PTB across the three countries (Table 5.2). Knowledge of malaria infection in pregnancy and PTB was highest in Mali (36%). About 16% of Ethiopian women stated that mental distress was a cause of PTB. Few women from Bangladesh and Mali had reported a link between mental distress and PTB. Few respondents in all three countries identified violence from a spouse or other person as a cause of PTB. Finally, almost 70% of Ethiopian women rated *Mitat* as a cause of PTB, and 21% of Malian women stated that *tozo gnimi* was a cause of PTB.

Men

Men too, across the three countries had limited knowledge about the causes of PTB. The two most commonly reported causes of PTB were excessive workload and poor nutrition during pregnancy. Excessive workload was the most known PTB cause among Ethiopian men but

was least reported by Mali men. Knowledge of poor nutrition as a cause of PTB was cited by approximately half of Bangladeshi men but was low among Ethiopian and Mali men.

Like women participating in this study, knowledge of the linkages between early marriage, short birth spacing, RTIs, and STIs and PTB was low among men in all three countries. In contrast, malaria infection during pregnancy as a cause of PTB was reported by more than a third of the Mali men. Mental distress and violence were not commonly identified by men as a cause of PTB across the three countries. About 40% of Ethiopian men stated that *Mitat* causes PTB, while 12% of Mali men said that *tozo gnimi* was linked to PTB (Table 5.2).

Adolescents

Overall, adolescent girls (15-19 years) in Bangladesh and Ethiopia had higher levels of knowledge of causes of PTB than adolescent boys (15-19 years). In Mali, adolescent girls had slightly lower levels of knowledge than boys on almost all causes of PTB except for *tozo gnimi* (Table 5.3). The two most commonly reported causes of PTB among adolescents were excessive workload and poor nutrition during pregnancy. Knowledge of early marriage as a cause of PTB was highest among Bangladeshi boys but was low among all other adolescents.

Short birth spacing, RTIs, and STIs were not commonly identified as causes of PTB by most adolescents (Table 5.3). The same was true of violence from intimate partners or others. However, 60% of Ethiopian adolescent girls were able to identify *Mitat* as a cause of PTB. Twenty-four percent of adolescent boys were knowledgeable about *Mitat*. *Tozo gnimi* was identified as a cause of PTB by 11% of adolescent girls and 6% of adolescent boys in Mali.

Tables

Table 5.2. Knowledge of causes of PTB among women and men in Bangladesh, Ethiopia and Mali

	Women			**Men**		
Causes of PTB	Bangladesh N=927 Yes	Ethiopia N=855 Yes	Mali N=904 Yes	Bangladesh N=466	Ethiopia N=432	Mali N=455
	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)
Excessive workload	638 (68.8)	739 (86.4)	292 (31.9)	238 (62.0)	370 (85.6)	126(27.6)
Poor nutrition during pregnancy	509 (54.9)	316 (36.9)	137 (15.0)	233 (50.0)	156 (36.1)	87 (19.1)
Not attending ANC services	44 (4.75)	264 (30.8)	252 (27.5)	33 (7.0)	120 (27.2)	117(25.7)
Early marriage	140 (15.1)	67 (7.8)	51 (5.5)	101(21.6)	24 (5.5)	24 (5.2)
Short birth spacing	30 (3.2)	31 (3.63)	13 (1.4)	10 (2.1)	5 (1.1)	9 (1.9)
Reproductive tract infection	8 (0.86)	36 (4.2)	96 (10.5)	4 (0.86)	5 (1.1)	43 (9.4)
Sexually transmitted infection	7 (0.7)	26 (3.0)	10 (1.0)	9 (1.9)	3 (0.7)	10 (2.2)
Mental distress	27 (2.9)	141 (16.4)	12 (1.3)	22 (4.7)	87 (20.1)	16 (3.5)
Malaria infection during pregnancy	1 (0.1)	39 (4.5)	341 (37.3)	0	6 (1.4)	176 (38.6)
Intimate partner violence	71 (7.6)	145 (16.9)	4 (0.4)	87 (18.6)	50 (11.5)	5 (1.1)
Violence from another person (not spouse)	6 (0.65)	121 (14.1)	4 (0.4)	25 (5.3)	23 (5.3)	2 (0.4)
***Mitat* (Ethiopia only)**	--	591 (69.1)	--	--	171 (39.5)	--
***Tozo gnimi* (Mali only)**	--	--	192 (21.0)	--	--	--

Table 5.3. Knowledge of causes of PTB among adolescents (15-19 years) in Bangladesh, Ethiopia and Mali

	Adolescent girls (15-19years)			Adolescent boys (15-19 years)		
Causes of PTB	Bangladesh N=465	Ethiopia N=444	Mali N=466	Bangladesh N=464	Ethiopia N=427	Mali N=436
	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)
Excessive workload	295 (63.4)	364 (81.9)	101 (21.6)	228 (49.1)	299 (70.0)	117 (26.8)
Poor nutrition during pregnancy	246 (52.9)	160 (36.0)	35 (7.5)	204 (43.9)	129 (30.2)	51 (11.7)
Not attending ANC services	24 (5.1)	147 (33.1)	90 (19.3)	23 (4.9)	75 (17.5)	80 (18.3)
Early marriage	63 (13.5)	41 (9.2)	35 (7.5)	102 (21.9)	25 (5.8)	48 (11.0)
Short birth spacing	11 (2.3)	11 (2.8)	7 (1.5)	1 (0.2)	3 (0.7)	8 (1.8)
Reproductive tract infection	4 (0.8)	17 (3.8)	14 (3.0)	1 (0.2)	4 (0.9)	14 (3.2)
Sexually transmitted infection	1 (0.2)	12 (2.7)	2 (0.4)	4 (0.8)	0 (0)	3 (0.6)
Mental distress	6 (1.2)	52 (11.7)	2 (0.4)	8 (1.7)	66 (15.4)	8 (1.8)
Malaria infection during pregnancy	0	15 (3.3)	83 (17.8)	0	7 (1.6)	63 (14.4)
Intimate partner violence	23 (4.9)	62 (13.9)	6 (1.2)	69 (14.8)	30 (7.0)	1 (0.2)
Violence from another person (not spouse)	5 (1.0)	47 (10.5)	7 (1.5)	23 (4.9)	19 (4.4)	0
***Mitat* (Ethiopia only)**	--	267 (60.1)	--	--	103 (24.1)	--
***Tozo gnimi* (Mali only)**	--	--	55 (11.8)	--	--	30 (6.8)

Multivariate models: Self-reported preterm birth

The goal of the multivariate models presented in this chapter were to identify the intermediate and distal factors that contribute to self-reported preterm birth using logistic regression modeling. Models of factors associated with self-reported PTB are presented for Ethiopia and Bangladesh to ascertain both risk and protective factors as outlined in Chapters 1 and 2.

The distal risk factors considered for these models included:

- Household wealth and household vulnerability indices
- Discriminatory gender norms, measured by:
    - Social norms[13] around gender-based violence
    - Discriminatory gender norms measured using the GEM[14] scale
    - Attitudes towards early marriage
    - Male involvement in household work during pregnancy
    - Nutrition practices that may be discriminatory to women
    - Excessive workload of women during pregnancy
- Household dynamics, measured by:
    - Couple communication around PTB and key risk factors
    - Decision-making within the household
    - Household environment (e.g. compassion or stress)

The intermediate factors considered in the study include birth complications, maternal morbidity, antenatal service utilization and birth preparedness. In addition to these intermediate and distal factors, individual factors such as self-efficacy, knowledge, and

[13] Social norms represent the societal influence on households and were measured using a 0-10 continuous scale where the respondent was asked about the situation in her neighborhood. The bounded descriptive norms represent the influence of a person's immediate cluster on her health behaviors. In the literature, the clustering of behaviors is described as bounded normative influence (Kincaid, 2004).

[14] See Chapter 6 for a more detailed description.

health-seeking behaviors were also measured. Health system factors include antenatal check-ups, nutrition counseling, birth preparedness, and treatment seeking for infections.

The primary proximate factors measured were birth complications,[15] infections, and maternal morbidity during pregnancy.

Bangladesh

The model of self-reported PTB for Bangladesh has a sample of 927 women for whom self-reported birth data were available. Table 5.4 shows bivariate and multivariate results showing associations between key proximate, intermediate, or distal factors and self-reported preterm birth.

Columns 3-4 show the bivariate associations between explanatory variables of interest and PTB. Columns 5-8 show the result of the multivariate analysis conducted. The table shows a strong association between education and protection from PTB (Table 5.4). Even primary education compared to no formal education had a significant protective effect on women in the Rangpur region of Bangladesh (AOR: 0.04; 95% CI: 0.007-0.26; $p<0.001$). Similarly, secondary education and higher was also significantly associated with a reduction in the odds of PTB as compared to those with no formal education (AOR: 0.17; 95% CI: 0.05-0.61; $p<0.01$).

Women from wealthier families were more than three times more likely to experience a PTB than women from the lowest wealth strata (Table 5.4). This may be due to the fact that women from wealthier households may face increased mobility and discriminatory gender restrictions such as not being allowed to be treated by a male doctor (Table 5.4).

Attitudes towards early marriage were measured using the percent scale (0-100). The following attitudinal statement, "Early marriage of girls (before 18) can help prevent sexual violence, assault, and harassment" was significantly associated with PTB in the adjusted model. Agreement with this statement suggests that early marriage is a solution for women who worry for their security and risk of sexual violence. Women who strongly agreed with this statement were 2.6 times more likely to have a preterm birth as compared to those who did not (95% CI: 1.39-9.55; $p<0.001$). Here the relationship between early marriage and PTB is highlighted.

Women who lived in neighborhoods where more than 7 out of 10 women had 4+ ANC visits may have protective effects for PTB. The data in this model were not significant (Table 5.4), but this measure of social norms was included for conceptual reasons as it could play an important role in preventing PTB (Table 5.4).

[15] Birth complications included: Excessive bleeding from vagina, obstructed/prolonged labor, hand/cord prolapse, hydramnios-passage of too much water with small/abnormal baby, retained placenta, large perineal tear, convulsion, unconsciousness/shock, severe breathlessness, fetal distress, baby not breathing at birth, *Mitat/Metat* (Ethiopia only), *tozo gnimi* (Mali only), post-partum hemorrhage, post-partum fever, or other. Please note that these complications are being considered as risk factors for PTB, rather than consequences of PTB. As this is a cross-sectional survey, we are unable to assess the temporal relationship between these variables.

Women who reported they lived in a community where gender-based violence was common were 4.5 times more likely to have a preterm birth as compared to those living in a community where violence was less common (95% CI: 1.47-14.21; p<0.001).

The GBV bounded descriptive norm completes the nested model of distal and intermediate risk factors. Column 5 of Table 5.4 indicates that the nested model explains 15 percent of the variance and that the pseudo r^2 is 0.15. birth complications, a proximate risk factor, remained significant in the Bangladesh PTB model. Data indicated that women with at least one birth complication were 3.4 times more likely to have a PTB as compared to those with no birth complications (95% CI: 1.34-8.65; p<0.01). The pseudo r^2 increased from 015 to 0.19 when this proximate risk factor was included in the model.

Ethiopia

There were 830 women with a child under two years with self-reported PTB data from Amhara, Ethiopia, in the sample. There was no data on self-reported PTB among 15 women, or 1.7% of the sample. Table 5.5 describes the risk factors of preterm birth in Ethiopia. The data are presented such that the distal and intermediate factors are entered first into the model (column 5), followed by the proximate factors (column 7). The table shows how much variance is explained in the model by distal and intermediate factors (column 5). We can see the nested model (distal and intermediate factors) and full model (distal, intermediate and proximate factors) in Table 5.5.

Column 3 shows the unadjusted odds ratios for key explanatory factors associated with PTB. Age was not significantly associated with PTB, though there does appear to be a mild protective effect of older age compared to the youngest age group (18-25 years).

Workload in pregnancy was significantly associated with PTB at a bivariate level (Table 5.5). Women who reported the same or more workload compared to a typical day were twice as likely to experience a PTB compared to women who worked less than usual during pregnancy; however, this was significant at the p<0.1 level only (Table 5.5).

We asked the respondents about food consumption during the last trimester compared to the rest of their pregnancy, with categories including much less than usual, less than usual, the same amount, and more than usual. A high level of reduction of food intake in the final trimester was significantly associated with preterm birth in both unadjusted and adjusted models. Table 5.5 shows a protective effect for those women who reported eating a little bit less is significantly more protected compared with eating very little. Eating the same amount is also significantly more protected than eating very little in the final trimester (Table 5.5).

The study was conducted in the Amhara region of Ethiopia, where the vast majority of individuals were part of the Ethiopian Orthodox church. Fasting is an important practice that both women engage in, even during pregnancy. As shown in Table 5.5, women who reported fasting if unwell were more likely to experience a PTB as compared to those who reported not fasting when unwell (AOR: 6.12; 95% CI: 2.7-13.0; p<0.001).

Evidence from the qualitative study conducted as part of this research endeavor (Johns Hopkins Center for Communication Programs, 2020) identified *Mitat* as a condition that results after exposure to extreme heat. *Mitat* was locally considered as a major cause of

PTB.[16] Table 5.5 shows a significant association between knowledge of *Mitat*[17] and protection from preterm birth. With *Mitat* we come to the end of the "nested" model, which includes distal and intermediate risk factors of PTB. The pseudo r^2 for this model is 0.15.

When birth complications are added to the model, it remains strongly and significantly associated with experiencing a PTB (columns, 7&8, Table 5.5). Women who reported five or more birth complications were three times more likely to have a preterm birth as compared to those with none or only 1 birth complication (95% CI: 1.12-7.47; p<0.01). The full model shows a pseudo r^2 of 0.15 after the addition of birth complications into the model.

Tables

Table 5.4. Risk factors associated with self-reported preterm birth (PTB) among women (15-49 years) with child <2 years in Rangpur, Bangladesh (n= 927)

Risk Factors of PTB		Crude Odds Ratio		Distal and Intermediate Risk Factors		Proximate Risk Factors	
Col 1	**Col 2**	**Col 3**	**Col 4**	**Col 5**	**Col 6**	**Col 7**	**Col 8**
		Unadjusted OR	95% CI	Adjusted OR	95% CI	Adjusted OR	95% CI
Education							
Reference	No formal education	1.0					
	Primary	0.50***	0.009-0.27	0.04***	0.007-0.26		
	Secondary+	0.15***	0.05-0.44	0.17**	0.05-0.61		
Wealth Index							
Reference	Low (0-3)	1.0					
	Middle (4-5)	1.83	0.61-5.41	1.76	0.55-5.6		
	High (6-9)	3.37*	1.13-10.02	3.82*	1.15-12.7		
Attitude: Early marriage can help prevent sexual violence							
Reference	Low agreement	1.0					
	High agreement	2.56*	1.12-5.87	2.64***	1.39-9.55		
Social Norm: Prevalence of 4+ANC in neighborhood							
Reference	Low (0-3 women)	1.0					
	Medium (4-6 women)	0.41	0.15-1.09	0.43	0.15-1.28		
	High (7-10 women)	0.38	0.14-1.04	0.38	0.12-1.2		
Bounded social norm. GBV+							
Reference	Low (0-3)	1.0					
	Medium (4-6)	0.61	0.20-1.86	0.73	0.23-2.34		
	High (7-10 women)	3.78	1.33-10.7	4.57***	1.47-14.21		
Birth complications							
Reference	No (0)	1.0					
	Had at least 1 birth comp	3.3**	1.3-8.05			3.41**	1.34-8.65
Pseudo R^2				0.15		0.19	

*** p<0.001, ** p<0.01, * p<0.05, ^ p<0.1; GBV = gender-based violence

[16] From the Part A report, "A new perspective that emerged from this analysis was the linkage between workload and "Mitat," a condition acquired from excessive exposure and work under the severe heat of the sun. *Mitat*'s linkage with PTB was articulated by several study participants, especially in the context of the lowlands of the Amhara region where the sun's rays can be unforgiving." In light of these findings, we added a question on *Mitat* to the household survey questionnaire (Johns Hopkins Center for Communication Programs, 2020, p. 28).

[17] Recent studies show that exposure to extreme heat can trigger preterm births (Konkel, 2019; Sun et al., 2019).

Table 5.5. Risk factors associated with self-reported preterm birth (PTB) among women (15-49 years) with a child < 2 years in Amhara, Ethiopia (n=830)

Risk Factors of PTB		**Crude Odds Ratio**		**Distal and Intermediate Risk Factors**		**Proximate Risk Factors**	
		Unadjusted OR	95% CI	Adjusted OR	95% CI	Adjusted OR	95% CI
Col 1	**Col 2**	**Col 3**	**Col 4**	**Col 5**	**Col 6**	**Col 7**	**Col 8**
Age (years)							
Reference	18-25	1.0		1.0			
	26-29	0.63	0.24-1.66	0.55	0.20-1.51		
	30-48	0.57	0.26-1.19	0.54	0.24-1.20		
Workload in Pregnancy							
Reference	Less work than a typical day	1.0		1.0			
	Same or more work than a typical day	2.1*	1.03-4.46	2.56**	1.18-5.53		
Diet change in pregnancy							
Reference	Much less than usual						
	Somewhat less than usual	0.51	0.18-1.43	0.18**	0.05-1.62		
	The same amount	0.34^	0.11-1.06	0.15**	0.08-1.00		
	More than usual	0.28	0.05-1.51	0.24	0.03-1.48		
Fasting if unwell							
Reference	Doesn't fast if unwell	1.0		1.0			
	Continues to fast if unwell	5.25***	2.42-11.3	6.12***	2.7-13.0		
Knowledge of *Mitat* + as cause of PTB							
Reference	No	1.0		1.0			
	Yes	0.45*	0.23-0.90	0.45*	0.21-0.91		
Birth complications							
Reference	Low (0-1)	1.0				1.00	
	Medium (2-4)	1.3	0.58-3.06			1.04	0.41-2.41
	High (5+)	3.57***	1.57-8.08			3.06**	1.12-7.47
Pseudo R^2				0.15		0.17	

95% confidence interval in parentheses; *** p<0.001, ** p<0.01, * p<0.05, ^ p<0.1; + *Mitat = local Ethiopian construct of illness that is caused by severe exposure to midday sun.*

Comparing the two PTB models

The two PTB models had distinct risk factors as well as some similarities. Both models explained 15+ percent of the variance for distal and intermediate factors (based on a comparison of pseudo-R^2). In terms of context, both models identified the influence of specific contextual factors. For Bangladesh, it was the bounded descriptive norm of GBV and the linkage between early marriage and girls' protection from sexual violence. We know early marriage is a key risk factor for PTB, and it is clear that a PTB prevention strategy in Bangladesh must prioritize efforts to address early marriage.

Similarly, contextually the one issue related to Ethiopia that has emerged from the qualitative and quantitative data was the excessive workload that women bear. The other key factor in Ethiopia was nutrition, with fasting emerging as an important evidence-based determinant of PTB. The fact that *Mitat* could be significant as a preventive factor for PTB speaks volumes about the need to understand communities' concepts and constructs of health conditions like PTB.

The proximate factor that remained significant for both models was birth complications, even though we considered other proximate factors including illnesses during pregnancy, infections, and maternal morbidity.

Multivariate Modeling: Low birth weight

Logistic regression models of the factors associated with low birth weight (LBW) were fit for data gathered in Bangladesh and Mali. Ethiopia did not have a sufficient number of babies weighed at birth.

Bangladesh

The Bangladesh household survey included birthweights of 77 percent of the total sample of 927 of women of reproductive age (15-49 years). Of 714 women, 67 women or 9.3% had a LBW baby. Table 5.6 shows the model exploring factors associated with low birth weight in Rangpur, Bangladesh.

Older women (30-45 years) had a 2-times increased likelihood of having a LBW birth compared to women who were 15-21 years (95% CI: 1.03-4.88; $p<0.05$). Women with an attitude that early marriage will protect girls from sexual violence were significantly more likely to have a LBW baby as compared to those who reported low agreement with the marriage-related attitude (Table 5.6). Women whose responses suggested greater support of discriminatory gender norms related to sexual relationships were more likely, at the bivariate level, to report a LBW baby than those who reported less support of these discriminatory gender norms (column 3, Table 5.6). This relationship did not hold on for the multivariate model, but the variable has been kept in the model given the importance of discriminatory gender norms in the Bangladesh context.

The bounded descriptive social norm of having four or more ANC visits was significantly associated with LBW at both bivariate and multivariate levels. Women who reported that 4-5 women in their neighborhood had four or more ANC check-ups were less likely to be exposed to LBW births as compared to those who reported that women receiving four or more ANC visits were less common in their communities (Table 5.6).

As in the Bangladesh PTB model, the bounded descriptive norm of GBV was a significant risk factor at the bivariate level. However, this variable lost significance at the multivariate level (Table 5.6). Similarly, the social norm related to family planning use was associated with reduced odds of having a LBW birth at the bivariate level but lost significance in the adjusted model.

Women who said that they got married at the “right time” or would have preferred a “later” marriage were more likely to be protected from having a LBW baby compared to women who preferred to get married early (AOR: 0.55 and 0.36 respectively; $p<0.05$; Table 5.6).

Women who knew their date of delivery were 62 percent less likely to report having a LBW baby as compared to those who did not know their date of delivery (AOR; 0.38; 95% CI: 0.16-0.87; $p<0.05$). The LBW Bangladesh model included eight distal and intermediate risk factors and explained 9% of the variance according to the pseudo r^2.

When birth complications were added to the model, women with one or more birth complications were 1.7 times more likely to have a LBW baby as compared to those with no

birth complications (95% CI: 1.01-3.11; p<0.05). The total variance explained by the model was 11% according to the pseudo r^2.

Mali

In the model examining the factors associated with a LBW baby among women in Mali, women 28-32 years were shown to be significantly less likely to report having a LBW baby as compared to younger women (15-22 years). This implies that younger women are more likely to have low birth weight babies. Education was not significant in terms of being a protective factor for LBW. Women who reported greater support of discriminatory gender norms related to sexual relationships were 2.4 times more likely to have a LBW baby compared to women with less support of these discriminatory gender norms (Table 5.7).

Women who reduced their diet in the last trimester were significantly more vulnerable to LBW babies. On the other hand, women who ate the same or increased their diet were protected from LBW. In Mali, household tension and economic stress were both significant risk factors for LBW babies. Women who reported high household tension were 1.6 times more likely to have a LBW baby as compared to those with low household tension (95% CI: 1.07-2.31; p<0.05). Economic stress had a significant, positive association with a LBW baby in the multivariate model (AOR: 3.22; 95% CI: 1.5-6.9; p<0.01; Table 5.7).

Hard physical work during pregnancy such as cutting wood, grinding millet and working on the farm was associated with 2.5 times increased likelihood of having a LBW baby compared to women who did not report such physical labor during pregnancy (Table 5.7). A high degree of couple communication was shown to be protective against LBW (Table 5.7). Women who attended 4 or more ANC check-ups during pregnancy were also significantly less likely to have a LBW baby as compared to those who attended fewer ANC visits.

Anemia in pregnancy was a major risk factor for giving birth to a LBW baby. Women were 2.3 times more likely to have a LBW baby if they had anemia during pregnancy than if they did not (95% CI: 1.11-5.21; p<0.05). The variance explained by the distal and intermediate factors in the Mali LBW model was 0.17 based on the pseudo r^2.

Unlike in previous models related to PTB, birth complications were not a significant proximate factor associated with LBW in Mali.

Tables

Table 5.6. Risk factors associated with low birth weight (LBW) among women (15-49 years) with a child <2 years in Rangpur, Bangladesh (n=714)

Risk Factors of Low Birth Weight		Crude Odds Ratio		Distal and Intermediate Risk Factors		Proximate Risk Factors	
		Unadjusted OR	95% CI	Adjusted OR	95% CI	Adjusted OR	95% CI
Col 1	**Col 2**	**Col 3**	**Col 4**	**Col 5**	**Col 6**	**Col 7**	**Col 8**
Age							
Reference	15-21	1.0		1.0			
	22-25	1.24	0.60-2.56	1.57	0.72-3.44		
	26-29	1.24	0.59-2.59	1.40	0.63-3.0		
	30-45	1.9^	0.97-4.06	2.24*	1.03-4.88		
Attitude: Early marriage can help prevent sexual violence							
Reference	Low agreement	1.0		1.0			
	High agreement	2.07**	1.25-3.45	1.99**	1.14-3.49		
Discriminatory gender norms: Sexual relationships domain[18]							
Reference	Low support (0-250)	1.0		1.0			
	Medium support (251-500)	1.96	0.96-3.99				
	High support (501-800)	2.97**	1.24-7.06	1.27	0.49-3.31		
Social Norm: Prevalence of 4+ANC in neighborhood							
Reference	Low (0-3)	1.0		1.0			
	Medium (4-6)	0.46*	0.24-0.88	0.49*	0.24-0.99		
	High (7-10)	0.44**	0.22-0.84	0.50	0.24-1.0		
Bounded descriptive social norm. GBV+							
Reference	Low (0-3)	1.0		1.0			
	Medium (4-6)	1.25	0.71-2.21	1.23	0.67-2.25		
	High (7-10)	2.6**	1.2-5.9	2.33	0.98-5.44		
Social Norm. FP use							
Reference	Low (0-3)	0.1		0.1			
	Medium (4-6)	0.71	0.26-1.90	0.67	0.23-1.92		
	High (7-10)	0.39*	0.16-0.94	0.47	0.19-1.26		
Age preference for marriage							
Reference	Early	1.0		1.0			
	Right time	0.48**	0.27-0.82	0.55*	0.31-.99		
	Later	0.27**	0.12-0.26	0.36*	0.15-0.86		
Knows date of delivery							
	No	1.0		1.0			
	Yes	0.32**	0.15-0.69	0.38*	0.16-0.87		
Birth complications							
Reference	No (0)	1.0				1.0	
	Had at least 1 birth comp	1.83*	1.0-3.0			1.77*	1.01-3.11
Pseudo R^2					0.9	0.11	

*** p<0.001, ** p<0.01, * p<0.05, ^ p<0.1; GBV = gender-based violence

[18] The GEM scale was measured in Bangladesh using the ratio level "percent scale" from 0=100; The ratio level Ethiopian Hand Scale from 0-4 was used in Ethiopia and in Mali the ordinal 4-point Likert scale was used.

Table 5.7. Risk factors associated with low birth weight (LBW) among women (15-49 years) with a child <2 years in Mali (n=325).

Risk Factors of Low Birth Weight		Crude Odds Ratio		Distal and Intermediate Risk Factors	
		Unadjusted OR	95% CI	Adjusted OR	95% CI
Age					
Reference	15-22	1.0		1.0	
	23-27	0.82	0.44-1.54	0.75	0.33-1.6
	28-32	0.78	0.37-1.32	0.41*	0.17-0.99
	33-49	0.66	0.34-1.26	0.56	0.22-1.42
Education					
Reference	No formal education	1.0		1.0	
	Primary+	0.98	0.61-1.57	1.87	0.97-3.59
Discriminatory gender norms: Sexual relationships domain					
Reference	Low support (10-22)	1.0		1.0	
	Medium support (23-25)	1.70	0.95-3.04	1.40	0.67-2.94
	High support (26-28)	2.97**	1.5-5.5	2.44*	1.03-5.79
Change in diet in last trimester					
Reference	Eat little compared to earlier	1.0		1.0	
	Eat the same or more	0.36***	0.22-0.58	0.51*	0.27-0.96
Household tension	Low	1.0			
	High	1.91***	1.40-2.62	1.57*	1.07-2.31
Economic stress	No	1.0		1.0	
	Yes	2.0***	1.24-3.42	3.22**	1.5-6.9
Hard work (other)	No	1.0		1.0	
	Yes	1.87	1.14-3.0	2.50**	1.24-5.03
Couple Communication	Low	1.0		1.0	
	High	0.53**		0.48*	0.25-0.91
Attended 4+ ANC	No	1.0		0.1	
	Yes	0.42**	0.25-0.68	0.47**	0.25-0.87
Anemia in pregnancy	No	1.0		1.0	
	Yes	2.0**	1.13-3.57	2.38*	1.11-5.21
Pseudo R^2					0.17

*** p<0.001, ** p<0.01, * p<0.05, ^ p<0.1;

Comparing the low birth weight model in Bangladesh and Mali

The two LBW models showed an association with age and LBW. However, with Bangladesh older women (30-45 years) were most likely to have a LBW compared to younger women compared to Ethiopia, where younger women (15-22 years) were more likely to have a LBW baby. These data indicate a U-shaped relationship with age and LBW.

Women's support of discriminatory gender norms related to sexual relationships was significantly associated with having a LBW baby at the bivariate level in Bangladesh and at the multivariate level in Mali. In Bangladesh the bounded descriptive norms related to 4+ ANCs was a protective factor for LBW, in Mali it was the actual attendance of 4+ ANC visits that protected women from LBW.

The two models then diverge into different contextual risk factors. For Bangladesh, it was two attitudes related to early timing of marriage that were significant risk factors indicating that the LBW preventive strategy must work with the larger efforts for increasing age at marriage. On the other hand, the Mali data show that Malian women who experience a high level of economic stress and household tension are significantly more likely to have LBW babies. In Mali, women who reported hard physical work during pregnancy had a significantly higher likelihood of having LBW babies.

Women who ate less in the trimester compared to the rest of their pregnancy were significantly more likely to have a LBW baby. This finding highlights the need to promote adequate nutrition in Mali in the final trimester of pregnancy

A higher level of couple communication on LBW was a protective factor in Mali indicating that promoting couple communication around LBW can be part of a preventive strategy for LBW. Finally, anemia during pregnancy was a risk factor for LBW in Malian women. Interestingly for the two LBW models, birth complications were a risk factor in Bangladesh but not in Mali.

Chapter Six: Discriminatory gender norms and practices

Chapter Six examines contextual factors that influence risk factors for PTB among women in Bangladesh, Ethiopia, and Mali. As outlined in Chapter 1, discriminatory gender norms are a critical distal factor that influence women's and men's, adolescent girls' and boys' lived realities, access to opportunities, household dynamics, health behaviors, and ultimate health outcomes. This chapter describes discriminatory gender norms and bounded descriptive norms related to violence as reported by women, men, and adolescents.

Discriminatory gender norms

Participants' attitudes towards discriminatory gender norms were measured using 24 items from the previously validated gender equitable men, or GEM scale (C-Change, 2014). The GEM scale asks participants to what extent they agree with a set of statements related to discriminatory gender norms. These statements correspond to four sub-domains: 1) violence, 2) sexual relationships, 3) reproductive health, and 4) household responsibilities. These statements are presented in Table 6.1. below. Greater agreement with each of these statements reflects stronger support of discriminatory gender norms related to violence, sexual relationships, reproductive health, and household responsibilities.

Table 6.1. Statements and sub-domains of the GEM scale used to measure discriminatory gender norms in Bangladesh, Ethiopia, and Mali.

Sub-domains	Statements asked of participants as part of the GEM scale
Violence	1) There are times when a woman deserves to be beaten.
	2) A woman should tolerate violence to keep her family together.
	3) It is alright for a man to beat his wife if she is unfaithful.
	4) A man can hit his wife if she won't have sex with him.
	5) If someone insults a man, he should defend his reputation with force if he has to.
	6) A man using violence against his wife is a private matter that shouldn't be discussed outside the couple.
Sexual relationships	7) It is the man who decides what type of sex to have.
	8) Men are always ready to have sex.
	9) Men need sex more than women do.
	10) A man needs other women even if things with his wife are fine.
	11) You don't talk about sex, you just do it.
	12) It disgusts me when I see a man acting like a woman.
	13) A woman should not initiate sex.
	14) A woman who has sex before she marries does not deserve respect.
Reproductive health	15) Women who carry condoms on them are easy.
	16) Men should be outraged if their wives ask them to use a condom.
	17) It is a woman's responsibility to avoid getting pregnant.
	18) Only when a woman has a child is she a real woman.
	19) A real man produces a male child.
Household responsibilities (domestic chores and daily life)	20) Changing diapers, giving a bath, and feeding kids is the mother's responsibility.
	21) A woman's role is taking care of her home and family.
	22) The husband should decide to buy the major household items.
	23) A man should have the final word about decisions in his home.
	24) A woman should obey her husband in all things.

Following previous literature (C-Change, 2014; Pulerwitz & Barker, 2008), an overall score as well as scores for four sub-domains related to 1) violence, 2) sexual relationships, 3) reproductive health, and 4) household responsibilities, were calculated and compared across participant types within each country. To facilitate comparability, scores were categorized into low, medium, and high groups, with the same cut-offs used within each country to enable comparisons between women, men, and adolescents (both girls and boys). These categories compare those with low support of discriminatory gender norms (reflecting less favorable attitudes towards discriminatory gender norms) to those with medium and high or strong support of discriminatory gender norms.

Tables 6.2, 6.3, and 6.4 summarize discriminatory gender norms as reported by women, men, and adolescents in Bangladesh, Ethiopia, and Mali.

Bangladesh

In Bangladesh, one third of women with a child under two years of age were categorized as having low support for discriminatory gender norms as described above. In comparison, 57% of men showed low support of discriminatory gender norms. Across all four sub-domains of discriminatory gender norms (violence, sexual relationships, reproductive health, and household responsibilities), a larger percentage of men reported low support of discriminatory gender norms than did women (Table 6.2). In comparison, adolescent girls' and boys' responses varied across sub-domain. A larger percentage of girls reported low support of discriminatory gender norms related to violence and reproductive health (violence: 37% vs. 30%; reproductive health: 38% vs. 35%), while a larger percentage of boys reported low support of discriminatory gender norms related to household responsibilities (39% vs. 31%).

Ethiopia

Thirty-three percent of women with a child under two years of age had scores that reflected high or strong support of discriminatory gender norms. In comparison, 28% of men, and 20% of adolescents reported high or strong support of discriminatory gender norms. A small percentage (17%) of adolescent girls showed high or strong support of discriminatory gender norms, while 51% showed low support for discriminatory gender norms. These trends varied by sub-domain, with a larger percentage of men having low support of discriminatory gender norms related to violence more equitable than did women or adolescents (52% vs. 37% of women and 46% of adolescents). In comparison, adolescent girls' responses on the sexual relationships and reproductive health sub-domains suggested that a higher percentage of adolescent girls showed low support for these discriminatory gender norms than did women, men, and adolescent boys (Table 6.3). A larger percentage of adolescent boys and girls also reported low support of discriminatory gender norms related to household responsibilities (63% and 62% respectively) than did women (41%) and men (51%).

Mali

In Mali, a larger percentage of men reported low support of discriminatory gender norms related to violence than did women (67% vs. 42%). A larger percentage of adolescent boys and girls also reported low support of violent-related discriminatory gender norms as compared to women (59% and 53% respectively). While a larger percentage of men reported low support of discriminatory gender norms related to reproductive health (54% as compared to 39% of women), only 31% of adolescent girls and 28% of adolescent boys had low support of these discriminatory gender norms. Responses related to household responsibilities were similar across participant types (Table 6.4).

Tables

Table 6.2. Support for discriminatory gender norms among women, men, and adolescents in Bangladesh.

	Bangladesh									
	women		men		Adolescent boys		Adolescent girls		Total adolescents [1]	
	n or mean	Col % or SD	n or mean	Col % or SD	n or mean	Col % or SD	n or mean	Col % or SD	n or mean	Col % or SD
Aggregated measure of all discriminatory gender norms (categorical)										
Low support	309	33.3	267	57.3	176	37.9	135	29.0	311	33.5
Medium support	312	33.7	138	29.6	166	35.8	143	30.8	309	33.3
High support	306	33.0	61	13.1	122	26.3	187	40.2	309	33.3
Discriminatory gender norms related to violence (categorical)										
Low support	309	33.3	215	46.1	139	30.0	171	36.8	310	33.4
Medium support	314	33.9	165	35.4	183	39.4	137	29.5	320	34.4
High support	304	32.8	86	18.5	142	30.6	157	33.8	299	32.2
Discriminatory gender norms related to sexual relationships (categorical)										
Low support	313	33.8	258	55.4						
Medium support	310	33.4	148	31.8						
High support	304	32.8	60	12.9						
Discriminatory gender norms related to reproductive health (categorical)										
Low support	319	34.4	228	48.9	163	35.1	178	38.3	341	36.7
Medium support	300	32.4	190	40.8	167	36.0	112	24.1	279	30.0
High support	308	33.2	48	10.3	134	28.9	175	37.6	309	33.3
Discriminatory gender norms related to household responsibilities (categorical)										
Low support	315	34.0	239	51.3	181	39.0	145	31.2	326	35.1
Medium support	332	35.8	130	27.9	157	33.8	156	33.5	313	33.7
High support	280	30.2	97	20.8	126	27.2	164	35.3	290	31.2

Notes:
Response scales used in each country varied (Ethiopia: 0-4 using the hand scale; Bangladesh: 0-100 using the paisa scale; Mali: 1-4 using an ordinal scale). Categorical variables presented here compare low support, medium support, and high or strong support of discriminatory gender norms included either in the full composite measure of all discriminatory gender norms or in the four sub-domains. Categories were calculated using the same cut-offs by country to facilitate comparisons between women, men, and adolescents within each country.
[1] Note: Categorical variable (terciles) calculated separately for adolescents due to the exclusion of the sexual relationships sub-domain.

Table 6.3. Support for discriminatory gender norms among women, men, and adolescents in Ethiopia.

	Ethiopia									
	women		men		Adolescent boys		Adolescent girls		Total adolescents	
	n or mean	Col % or SD	n or mean	Col % or SD	n or mean	Col % or SD	n or mean	Col % or SD	n or mean	Col % or SD
Aggregated measure of all discriminatory gender norms (categorical)										
Low support	294	34.4	162	37.5	173	40.5	227	51.1	400	45.9
Medium support	280	32.7	151	35.0	155	36.3	142	32.0	297	34.1
High support	281	32.9	119	27.5	99	23.2	75	16.9	174	20.0
Discriminatory gender norms related to violence (categorical)										
Low support	315	36.8	225	52.1	206	48.2	190	42.8	396	45.5
Medium support	290	33.9	124	28.7	124	29.0	153	34.5	277	31.8
High support	250	29.2	83	19.2	97	22.7	101	22.7	198	22.7
Discriminatory gender norms related to sexual relationships (categorical)										
Low support	311	36.4	163	37.7	169	39.6	218	49.1	387	44.4
Medium support	314	36.7	190	44.0	186	43.6	141	31.8	327	37.5
High support	230	26.9	79	18.3	72	16.9	85	19.1	157	18.0
Discriminatory gender norms related to reproductive health (categorical)										
Low support	376	44.0	159	36.8	138	32.3	280	63.1	418	48.0
Medium support	196	22.9	104	24.1	114	26.7	79	17.8	193	22.2
High support	283	33.1	169	39.1	175	41.0	85	19.1	260	29.9
Discriminatory gender norms related to household responsibilities (categorical)										
Low support	354	41.4	221	51.2	269	63.0	273	61.5	542	62.2
Medium support	256	29.9	100	23.1	81	19.0	99	22.3	180	20.7
High support	245	28.7	111	25.7	77	18.0	72	16.2	149	17.1

Notes:
Response scales used in each country varied (Ethiopia: 0-4 using the hand scale; Bangladesh: 0-100 using the paisa scale; Mali: 1-4 using an ordinal scale). Categorical variables presented here compare low support, medium support, and high or strong support of discriminatory gender norms included either in the full composite measure of all discriminatory gender norms or in the four sub-domains. Categories were calculated using the same cut-offs by country to facilitate comparisons between women, men, and adolescents within each country.

Table 6.4. Support for discriminatory gender norms among women, men, and adolescents in Mali.

	Mali									
	Women		Men[1]		Adolescent boys		Adolescent girls		Total adolescents[1]	
	n or mean	Col % or SD	n or mean	Col % or SD	n or mean	Col % or SD	n or mean	Col % or SD	n or mean	Col % or SD
Aggregated measure of all discriminatory gender norms (categorical)										
Low support	322	35.6	153	33.6	277	63.5	313	67.2	590	65.4
Medium support	309	34.2	164	36.0	9	2.1	10	2.1	19	2.1
High support	273	30.2	138	30.3	150	34.4	143	30.7	293	32.5
Discriminatory gender norms related to violence (categorical)										
Low support	381	42.1	303	66.6	257	58.9	249	53.4	506	56.1
Medium support	293	32.4	91	20.0	108	24.8	121	26.0	229	25.4
High support	230	25.4	61	13.4	71	16.3	96	20.6	167	18.5
Discriminatory gender norms related to sexual relationships (categorical)										
Low support	348	38.5	152	33.4	171	39.2	158	33.9	329	36.5
Medium support	337	37.3	156	34.3	140	32.1	155	33.3	295	32.7
High support	219	24.2	147	32.3	125	28.7	153	32.8	278	30.8
Discriminatory gender norms related to reproductive health (categorical)										
Low support	356	39.4	247	54.3	120	27.5	143	30.7	263	29.2
Medium support	293	32.4	96	21.1	180	41.3	216	46.4	396	43.9
High support	255	28.2	112	24.6	136	31.2	107	23.0	243	26.9
Discriminatory gender norms related to household responsibilities (categorical)										
Low support	339	37.5	166	36.5	146	33.5	181	38.8	327	36.3
Medium support										
High support	565	62.5	289	63.5	290	66.5	285	61.2	575	63.7

Notes:
Response scales used in each country varied (Ethiopia: 0-4 using the hand scale; Bangladesh: 0-100 using the paisa scale; Mali: 1-4 using an ordinal scale). Categorical variables presented here compare low support, medium support, and high or strong support of discriminatory gender norms included either in the full composite measure of all discriminatory gender norms or in the four sub-domains. Categories were calculated using the same cut-offs by country to facilitate comparisons between women, men, and adolescents within each country.

[1] Different set of variables for gem scale among men and adolescents, so full gender discriminatory norms scale and the sexual relationships sub-domain are categorized differently for each population type for these variables.

Violence

Bounded social norms related to physical violence

Tables 6.5, 6.6, and 6.7 summarize bounded descriptive norms related to violence as reported by women, men, and adolescents in Bangladesh, Ethiopia, and Mali. Few participants in Ethiopia described widespread physical violence experienced by women from their partner/spouse. Only 8% of women, 11% of men, and 10% of adolescent girls and boys reported that 4-6 women out of 10 had experienced physical violence. Participants in Bangladesh reported that physical violence by a partner/spouse was common, with 27% of women, 27% of men, and 25% of adolescent boys, and 29% of adolescent girls reporting that 4-6 out of 10 women in their community experienced such violence. Physical violence was also common in communities in Mali according to participants. A larger percentage of women (26%) and adolescent girls (24%) reported that 4-6 out of 10 women experience physical violence as compared to men (14%) and adolescent boys (21%).

Bounded social norms related to physical violence during pregnancy

Across settings, physical violence during pregnancy was perceived to be less common in communities as compared to physical violence against women generally (Tables 6.5-6.7). In Ethiopia, few women (3%) and adolescents (2%) reported such violence being experienced by 4-6 pregnant women out of 10 in their communities. In comparison, men considered physical violence during pregnancy to be more common (8% said 4-6 pregnant women experience physical violence from a partner/spouse).

In Bangladesh, physical violence during pregnancy in the community was considered more common than in Ethiopia, with 10% of women and adolescent girls reporting such violence being experienced by 4-6 pregnant women out of 10 in their communities. Similar to women and adolescent girls in Bangladesh, a larger percentage of women and adolescent girls in Mali reported physical violence during pregnancy being relatively common (4-6 women out of 10) in their communities than did men (women: 12% vs. men: 4%; adolescent girls: 10% vs. adolescent boys: 4%).

Tables

Table 6.5. Bounded descriptive norms related to violence among women, men, and adolescents in Bangladesh.

	Bangladesh									
	women		men		Adolescent boys		Adolescent girls		Total adolescents [1]	
	n or mean	Col % or SD	n or mean	Col % or SD	n or mean	Col % or SD	n or mean	Col % or SD	n or mean	Col % or SD
Bounded descriptive norm: Number of women out of 10 experiencing physical violence by partner/spouse										
0-3	622	67.1	315	67.6	325	70.0	304	65.4	629	67.7
4-6	250	27.0	126	27.0	114	24.6	135	29.0	249	26.8
7+	55	5.9	25	5.4	25	5.4	26	5.6	51	5.5
Bounded descriptive norm: Number of women out of 10 experiencing physical violence by partner/spouse during pregnancy										
0-3	819	88.3	445	95.5	440	94.8	414	89.0	854	91.9
4-6	88	9.5	20	4.3	22	4.7	46	9.9	68	7.3
7+	20	2.2	1	0.2	2	0.4	5	1.1	7	0.8

Table 6.6. Bounded descriptive norms related to violence among women, men, and adolescents in Ethiopia.

	Ethiopia									
	women		men		Adolescent boys		Adolescent girls		Total adolescents	
	n or mean	Col % or SD	n or mean	Col % or SD	n or mean	Col % or SD	n or mean	Col % or SD	n or mean	Col % or SD
Bounded descriptive norm: Number of women out of 10 experiencing physical violence by partner/spouse										
0-3	781	91.3	379	87.7	379	88.8	396	89.2	775	89.0
4-6	65	7.6	48	11.1	43	10.1	42	9.5	85	9.8
7+	9	1.1	5	1.2	5	1.2	6	1.4	11	1.3
Bounded descriptive norm: Number of women out of 10 experiencing physical violence by partner/spouse during pregnancy										
0-3	834	97.5	392	90.7	420	98.4	435	98.0	855	98.2
4-6	21	2.5	34	7.9	7	1.6	9	2.0	16	1.8
7+	0	0.0	6	1.4	0	0.0	0	0.0	0	0.0

Table 6.7. Bounded descriptive norms related to violence among women, men, and adolescents in Mali.

	Mali									
	Women		Men		Adolescent boys		Adolescent girls		Total adolescents	
	n or mean	Col % or SD	n or mean	Col % or SD	n or mean	Col % or SD	n or mean	Col % or SD	n or mean	Col % or SD
Bounded descriptive norm: Number of women out of 10 experiencing physical violence by partner/spouse										
0-3	426	47.1	284	62.4	263	60.3	234	50.2	497	55.1
4-6	234	25.9	64	14.1	92	21.1	111	23.8	203	22.5
7+	90	10.0	35	7.7	20	4.6	46	9.9	66	7.3
Don't know	154	17.0	72	15.8	61	14.0	75	16.1	136	15.1
Bounded descriptive norm: Number of women out of 10 experiencing physical violence by partner/spouse during pregnancy										
0-3	610	67.5	352	77.4	323	74.1	312	67.0	635	70.4
4-6	104	11.5	17	3.7	17	3.9	46	9.9	63	7.0
7+	17	1.9	2	0.4	1	0.2	3	0.6	4	0.4
Don't know	173	19.1	84	18.5	95	21.8	105	22.5	200	22.2

Discriminatory gender norms related to marriage

Discriminatory gender norms were also measured using a previously validated marriage norms scale composed of 14 items (Ethiopia and Bangladesh) or 13 items (Mali) assessing attitudes related to child, early, and forced marriage (CEFM) among young girls.

The marriage norms scale asks participants to what extent they agree with a set of statements related to CEFM. These statements are presented in Table 6.8. below. Greater agreement with each of these statements reflects stronger support of discriminatory gender norms related to CEFM. Three questions (8, 12, and 14) were recoded for consistency such that responses reflected higher or stronger support of discriminatory gender norms related to CEFM. During exploratory analyses, exploratory factor analysis using iterated principal factors was conducted by country to examine the extent to which participants' responses to these questions held together to form an overarching measure of CEFM-related discriminatory gender norms. The final scales constructed using this approach differed slightly across settings. The final questions included in the scale in each country are shown in Table 6.8.

To facilitate comparability, scores on this scale were categorized into low, medium, and high groups, with the same cut-offs used within each country to enable comparisons between women, men, and adolescents (both girls and boys). These categories compare those with low support of discriminatory gender norms related to CEFM (reflecting less favorable attitudes towards discriminatory gender norms on CEFM) to those with medium and high or strong support of discriminatory gender norms related to CEFM.

Table 6.2. Statements of the age of marriage scale used to measure discriminatory gender norms related to CEFM in Bangladesh, Ethiopia, and Mali.

Statements asked of participants as part of the marriage norms scale	Included in Bangladesh?	Included in Ethiopia?	Included in Mali?
1) A girl is ready for marriage once she starts menstruating.	Yes	No	Yes
2) Marrying girls young (before 18) can help protect family honor/reputation.	Yes	Yes	Yes
3) Girls who give birth between 15-18 years are more likely to have a healthy pregnancy/baby (compared to girls over 18).	Yes	No	Yes
4) Marrying girls young (before 18) can help resolve financial problems in the family.	Yes	Yes	Yes
5) Marrying girls young (before 18) can help provide them security.	Yes	Yes	Yes
6) Early marriage of girls (before 18) can help prevent sexual violence, assault, and harassment	Yes	Yes	Yes
7) Early marriage of boys (before 18) can help prevent perpetration of sexual violence, assault, and harassment	Yes	Yes	Yes
8) Marrying under 18 years is likely to have a negative impact on a girl's education (coding reversed)	No	No	No
9) Marrying a girl young (before 18) is preferable because younger brides are more obedient and respectful of their husbands.	Yes	Yes	Yes
10) Even if a girl does not want to be married, she should honor the decisions/wishes of her family.	No	Yes	Yes
11) Younger brides (before 18) require a lower dowry than older brides	Yes	No	Yes
12) A girl should never be forced or compelled into marriage. (coding reversed)		No	No
13) It is sometimes ok to beat or punish a girl when she dishonors her family.	Yes	No	No
14) Marrying girls young (before 18) puts them at a risk of having preterm babies (coding reversed)	No	No	No

Bangladesh

In Bangladesh, while a similar percentage of women and men reported low support of discriminatory gender norms related to CEFM (low support: 34% vs. 33%), a smaller percentage of men reported high or strong support (16% vs. 33%). A larger percentage of adolescent girls reported low support of discriminatory gender norms on CEFM (49%) than did other participant types (Table 6.9).

Among women in Bangladesh, 30% reported wanting to have gotten married earlier than they did and 24% wanted to get married later than they did (Table 6.9). In comparison, 61% of men reported that they got married at the right time and 25% said that they wanted to get married later than they did. Nearly all women and men reported that they wanted to get married at an age 18 or older. Only five women, and no men, said that they did not get married at the right time and instead wanted to get married at an age under 18. Women's mean preferred age was five years younger (20.2 years) than men (25.7 years). Adolescent girls and boys also wanted to get married at older ages (boys: 25.7 years vs. girls: 22.1 years). Nearly all participants reported that the ideal age of marriage for girls and boys was 18 years or older (Table 6.9).

Bounded descriptive norms related to age of marriage were assessed by asking about the number of brides out of 10 new couples who are less than 18 years old at marriage. In

Bangladesh, 15% of women and 17% of adolescent girls said that ***seven or more brides*** out of 10 were less than 18 compared to only 9% of men and adolescent boys.

Ethiopia

A comparison of responses between women, men, and adolescents suggested that a larger percentage of men had low support of discriminatory gender norms related to CEFM than women (low support: 52% vs. 37%). A larger percentage of adolescent boys also reported low support of such discriminatory gender norms (49%) than did girls (42%).

An investigation of age of marriage preferences showed that similar to Bangladesh, 46% of women reported wanting to have gotten married earlier than they did (Table 6.10). In comparison, 68% of men reported that they got married at the right time and only 20% said that they wanted to get married earlier than they did. The preferred age of marriage among those who said that they did not get married at the right time was most commonly 18 or older (women: 51% married at right time, 41% preferred 18 or older, and 8% preferred less than 18; men: 68% married at right time, 31% preferred 18 or older, and 1% preferred less than 18). When asked what their preferred age of marriage was for themselves, women's mean preferred age was more than four years younger (19.2 years) than men (23.6 years). Adolescent girls and boys had mean preferred ages of marriage that were also higher than women, but adolescent girls still wanted to get married at an earlier age than women (25.4 years and 22.1 years respectively).

The ideal age of marriage for girls was commonly reported to be 18 years or older among women (89%), men (84%), and adolescents (boys: 94%; girls: 97%). In contrast, nearly all participants reported that the ideal age of marriage for boys was 18 years or older (women: 99%; men: 98%; adolescent boys: 99.5%; girls; 99%).

In Ethiopia, 15% of men said that among 10 brides recently married, ***between three and 10 of them*** were less than 18 when married compared to only 5% of women. Adolescent boys were also more likely to report that among 10 brides recently married, ***between three and 10 of them*** were less than 18 when married (boys: 21% vs. girls: 11%).

Mali

In Mali, responses related to marriage norms were similar across participant types, with 31% of adolescent boys, 35% of adolescent girls, 37% of women, and 38% of men reporting low support of discriminatory gender norms related to CEFM (Table 6.11).

Among women and men in Mali, most (76% and 74% respectively) reported that they got married at the right time. Fifteen percent of women and 16% of men reported wanting to have gotten married later than they did. Nearly all reported that they wanted to get married at an age 18 or older (women: 77% married at right time, 20% preferred 18 or older, and 3% preferred less than 18; men: 74% married at right time, 25% preferred 18 or older, and 1% preferred less than 18). Mean preferred age of marriage was lower for women (19.7 years) than men (24.5 years) and for adolescent girls (19.2 years) than adolescent boys (23.1 years). Thirty-eight percent of women reported that the ideal age of marriage for girls was less than 18 years of age as compared to only 7% who said that the ideal age of marriage for boys was less than 18. Men's and adolescents' responses followed a similar trend (Table 6.11). Among men, 38% said that the ideal age of marriage for girls was less than 18 years of age as compared to only 4% who said the same thing for boys. Among adolescent boys, the difference varied from 31% who said the ideal age of marriage for girls was under 18 to only

2% who said the ideal age of marriage for boys was under 18. Among adolescent girls, the difference was 27% and 5% respectively.

Marriage before age 18 was considered common in participants' communities. Twenty-two percent of women, 13% of men, and 13% of adolescents (13% of adolescent boys and 14% of adolescent girls) in Mali said that ***seven or more brides*** out of 10 were less than 18.

Tables

Table 6.9. Marriage norms and age of marriage among women, men, and adolescents in Bangladesh.

	Bangladesh									
	women		men		Adolescent boys		Adolescent girls		Total adolescents	
	n or mean	Col % or SD	n or mean	Col % or SD	n or mean	Col % or SD	n or mean	Col % or SD	n or mean	Col % or SD
Discriminatory gender norms related to CEFM scale (categorical)										
Low support	311	33.5	154	33.0	180	38.8	228	49.0	408	43.9
Medium support	308	33.2	237	50.9	231	49.8	166	35.7	397	42.7
High support	308	33.2	75	16.1	53	11.4	71	15.3	124	13.3
When would have liked to get marriage										
Earlier	281	30.3	69	14.8						
Right time	425	45.8	282	60.5						
Later	221	23.8	115	24.7						
Preferred age of marriage										
Married at right time	425	45.8	282	60.5						
Under 18	5	0.5	0	0						
18 and up	497	53.6	184	39.5						
Preferred marriage age for self	20.2	2.3	25.7	3.3	25.7	2.8	22.1	2.6	23.9	3.2
Ideal age of marriage for girls (continuous)	18.4	1.3	18.4	1.3	18.6	1.3	18.4	1.2	18.5	1.3
Ideal age of marriage for girls (categorical)										
Under 18	9	1.0	22	4.7	8	1.7	0	0.0	8	0.9
18 and up	918	99.0	444	95.3	456	98.3	464	100.0	920	99.1
Ideal age of marriage for boys (continuous)	21.8	1.8	22.4	1.9	22.2	2	21.7	1.7	21.9	1.8
Ideal age of marriage for boys (categorical)										
Under 18	0	0	0	0	0	0	0	0	0	0
18 and up	927	100.0	466	100.0	464	100.0	464	100.0	928	100.0
Bounded descriptive norm: Number of brides out of 10 new couples who were 18 at marriage										
0-3	453	48.9	308	66.1	313	67.5	246	53.0	559	60.2
4-6	328	35.4	118	25.3	109	23.5	138	29.7	247	26.6
7+	146	15.7	40	8.6	42	9.1	80	17.2	122	13.1

Notes:
Response scales used in each country varied (Ethiopia: 0-4 using the hand scale; Bangladesh: 0-100 using the paisa scale; Mali: 1-4 using an ordinal scale). Categorical variables presented here comparing low support, medium support, and high or strong support for discriminatory gender norms related to CEFM. Categories were calculated using the same cut-offs by country to facilitate comparisons between women, men, and adolescents within each country.

Table 6.10. Marriage norms and age of marriage among women, men, and adolescents in Ethiopia.

	Ethiopia									
	women		men		Adolescent boys		Adolescent girls		Total adolescents	
	n or mean	Col % or SD	n or mean	Col % or SD	n or mean	Col % or SD	n or mean	Col % or SD	n or mean	Col % or SD
Discriminatory gender norms related to CEFM scale (categorical)										
Low support	312	36.5	226	52.3	210	49.2	186	41.9	396	45.5
Medium support	311	36.4	137	31.7	137	32.1	176	39.6	313	35.9
High support	232	27.1	69	16.0	80	18.7	82	18.5	162	18.6
When would have liked to get marriage										
Earlier	397	46.4	87	20.1						
Right time	438	51.2	295	68.3						
Later	20	2.3	50	11.6						
Preferred age of marriage										
Married at right time	438	51.2	295	68.3						
Under 18	67	7.8	5	1.2						
18 and up	350	40.9	132	30.6						
Preferred marriage age for self	19.2	2.6	23.6	4.5	25.4	3.7	22.1	3.1	23.7	3.8
Ideal age of marriage for girls (continuous)	18.8	1.9	18.6	2.2	19.8	2.5	19.3	2.2	19.5	2.3
Ideal age of marriage for girls (categorical)										
Under 18	95	11.1	71	16.4	26	6.1	13	2.9	39	4.5
18 and up	760	88.9	361	83.6	401	93.9	430	97.1	831	95.5
Ideal age of marriage for boys (continuous)	23.3	3.4	23.4	3.1	23.8	3	23.2	3.6	23.5	3.3
Ideal age of marriage for boys (categorical)										
Under 18	5	0.6	7	1.6	2	0.5	4	0.9	6	0.7
18 and up	850	99.4	425	98.4	425	99.5	440	99.1	865	99.3
Bounded descriptive norm: Number of brides out of 10 new couples who were 18 at marriage										
0-3	812	95.0	368	85.2	336	78.7	395	89.0	731	83.9
4-6	40	4.7	50	11.6	86	20.1	41	9.2	127	14.6
7+	3	0.4	14	3.2	5	1.2	8	1.8	13	1.5

Notes:
Response scales used in each country varied (Ethiopia: 0-4 using the hand scale; Bangladesh: 0-100 using the paisa scale; Mali: 1-4 using an ordinal scale). Categorical variables presented here comparing low support, medium support, and high or strong support for discriminatory gender norms related to CEFM. Categories were calculated using the same cut-offs by country to facilitate comparisons between women, men, and adolescents within each country.

Table 6.11. Marriage norms and age of marriage among women, men, and adolescents in Mali.

	Mali									
	Women		Men		Adolescent boys		Adolescent girls		Total adolescents	
	n or mean	Col % or SD	n or mean	Col % or SD	n or mean	Col % or SD	n or mean	Col % or SD	n or mean	Col % or SD
Discriminatory gender norms related to CEFM scale (categorical)										
Low support	334	36.9	172	37.8	136	31.2	163	35.0	299	33.1
Medium support	297	32.9	164	36.0	175	40.1	172	36.9	347	38.5
High support	273	30.2	119	26.2	125	28.7	131	28.1	256	28.4
When would have liked to get marriage										
Earlier	76	8.5	47	10.3						
Right time	685	76.2	336	73.8						
Later	138	15.4	72	15.8						
Preferred age of marriage										
Married at right time	685	76.6	337	74.2						
Under 18	29	3.2	4	0.9						
18 and up	175	19.6	113	24.9						
Don't know	5	0.6								
Preferred marriage age for self	19.7	2.8	24.5	5.2	23.1	4	19.2	2.7	21.1	3.9
Ideal age of marriage for girls (continuous)	17.4	2.2	17.5	2.1	17.8	2.4	17.9	1.8	17.9	2.1
Ideal age of marriage for girls (categorical)										
Under 18	338	37.6	174	38.2	135	31.0	124	26.6	259	28.7
18 and up	536	59.7	278	61.1	301	69.0	342	73.4	643	71.3
dk	24	2.7	3	0.7						
Ideal age of marriage for boys (continuous)	21.6	3.7	21.6	3.8	21.5	2.9	21.3	3.2	21.4	3.1
Ideal age of marriage for boys (categorical)										
Under 18	59	6.6	20	4.4	7	1.6	21	4.5	28	3.1
18 and up	773	86.7	433	95.6	429	98.4	445	95.5	874	96.9
Don't know	60	6.7								
Bounded descriptive norm: Number of brides out of 10 new couples who were 18 at marriage										
0-3	255	28.2	204	44.8	161	36.9	173	37.1	334	37.0
4-6	257	28.4	98	21.5	220	50.5	228	48.9	448	49.7
7+	195	21.6	61	13.4	55	12.6	65	13.9	120	13.3
Don't know	197	21.8	92	20.2						

Notes:
Response scales used in each country varied (Ethiopia: 0-4 using the hand scale; Bangladesh: 0-100 using the paisa scale; Mali: 1-4 using an ordinal scale). Categorical variables presented here comparing low support, medium support, and high or strong support for discriminatory gender norms related to CEFM. Categories were calculated using the same cut-offs by country to facilitate comparisons between women, men, and adolescents within each country.

Chapter Seven: Household dynamics and environment

Chapter Seven describes key aspects of women's, men's, and adolescents' household dynamics and environment that play a crucial role in influencing women's lived experiences during pregnancy. The chapter is organized into three sections: 1) women's workload and support during pregnancy; 2) household power dynamics, including couple communication and decision-making; and 3) mental health and household environment, which include participants' life satisfaction, emotional well-being, household compassion, and household stress. Participants' responses in Bangladesh, Ethiopia, and Mali are described within each section.

Women's workload and support during pregnancy

Women described the principal activities they were engaged in on a typical day during their most recent pregnancy. Table 7.1 shows four summary measures of women's workload during pregnancy:

1. A simple summary index of any workload during pregnancy;
2. A simple summary index of heavy workload during pregnancy, defined by those activities considered by at least 10% of women to be heavy/physical;
3. A weighted summary index of typical workload during pregnancy weighted by the percentage of participants who said that the activity required physical effort
4. A summary index of typical workload during pregnancy that assigned summary scores based on whether each individual 1) engaged in a particular activity and 2) perceived the activity to require physical effort

Women described engaging in numerous activities during a typical day during their most recent pregnancy. In Bangladesh, 28% of women reported engaging in 8-13 activities per day, including cooking, laundry, dishes, sweeping, mopping, bringing groceries, filling water containers, carrying water, getting fuel, tending livestock, childrearing, carrying grains or water on their back, or cleaning the yard/land near the household. In Ethiopia, 20% of women reported engaging in 8-11 of such activities, while 17% of women in Mali described engaging in 7-12 of such activities.

In comparison to typical workload, 21% of women in Bangladesh, 33% of women in Ethiopia, and 33% of women in Mali reported engaging in high levels of heavy workload[19] during their most recent pregnancy.

In addition to describing their typical workload during pregnancy, women were asked to compare their workload during pregnancy to their workload pre-pregnancy. In Bangladesh, more than half (59%) reported that their workload during pregnancy was less than a typical day pre-pregnancy. In contrast, only 49% of women in Ethiopia and 32% of women in Mali reported that their workload was less during their most recent pregnancy than pre-pregnancy. Two-thirds of women in Mali reported that their workload had stayed the same (67%). A minority of participants stated that their workload during pregnancy had increased as compared to before their pregnancy (6% in Bangladesh; 5% in Ethiopia; 2% in Mali) .

[19] Defined as at least four physically demanding activities in Bangladesh and Mali; at least five in Ethiopia.

During their last trimester, most women across the three countries had worked (Bangladesh: 73%; Ethiopia: 81%; Mali: 71%).

In response to the workload outlined by participants, participants were also asked about their sources of support during pregnancy (Table 7.2) 85% of women in Bangladesh and 81% of women in Ethiopia reported receiving any help during pregnancy. In contrast, only 55% of women in Mali reported receiving help during pregnancy.

There were major differences between women's and men's perspectives on whether women's spouses helped during pregnancy. In all three countries, a larger percentage of men reported that they had helped during their spouse's pregnancy than did women. In Bangladesh, 60% of women said that their spouses had helped, while 81% of men said that they did. In Ethiopia, 92% of men reported helping, while only 60% of women reported that their spouse had helped during pregnancy. In Mali, 65% of men reported helping while only 6% of women stated that their spouse had helped them during pregnancy.

Other important sources of help are shown in Table 7.2. Forty-six percent of women in Bangladesh cited that their mothers-in-law were key sources of help, compared to only 3% in Ethiopia and 6% in Mali. Children were also important sources of help for women in Ethiopia (40% of women) and Mali (22% of women). Siblings, although less common, were also cited as key sources of help (7%-13% across the three settings).

Tables

Table 7.1. Workload during last pregnancy as reported by women in Bangladesh, Ethiopia, and Mali.

	Ethiopia		Bangladesh		Mali	
	women		women		women	
	n or mean	Col % or SD	n or mean	Col % or SD	n or mean	Col % or SD
Workload on typical day during pregnancy: Summary index (continuous)	5.9	2	5.8	2.8	4.6	2.2
Workload on typical day during pregnancy: Summary index (categorical) [1]						
Low	352	41.2	315	34.0	403	44.6
Medium	329	38.5	352	38.0	349	38.6
High	174	20.4	260	28.0	152	16.8
Heavy workload on typical day during pregnancy: Summary index (continuous)	3.8	1.3	2.4	1.5	2.8	1.2
Heavy workload on typical day during pregnancy: Summary index (categorical) [2]						
Low	292	34.2	568	61.3	361	39.9
Medium	279	32.6	163	17.6	248	27.4
High	284	33.2	196	21.1	295	32.6
Workload during pregnancy weighted based on community perceptions heavy workload: Summary index (continuous)	1.3	0.4	1.5	0.6	0.8	0.3
Workload during pregnancy weighted based on community perceptions heavy workload: Summary index (categorical)						
Low	288	33.7	329	35.5	342	37.8
Medium	282	33.0	304	32.8	261	28.9
High	285	33.3	294	31.7	301	33.3
Workload during pregnancy based on each individual woman's perception of heavy workload: Summary index (continuous)	1.9	1.5	2	1.4	1.2	1.1
Workload during pregnancy based on each individual woman's perception of heavy workload: Summary index (categorical) [3]						
Low	458	53.6	359	40.1	622	68.8
Medium	204	23.9	305	34.0	282	31.2
High	193	22.6	232	25.9		
Workload during pregnancy as compared to pre-pregnancy period						
Less than typical day	418	48.9	543	58.6	284	31.6
Same as typical day	397	46.4	326	35.2	600	66.7
More than typical day	40	4.7	58	6.3	15	1.7
Workload during last trimester: Woman worked during third trimester	689	80.6	677	73.0	637	71.0

Notes:
[1] Bangladesh: Low: 0-4; Medium: 5-7; High: 8-13
Ethiopia: Low: 0-5; Medium: 6-7; High: 8-11
Mali: Low: 0-4; Medium: 5-6; High: 7-12

[2] Bangladesh: Low: 0-2; Medium: 3; High: 4-8
Ethiopia: Low: 0-3; Medium: 4; High: 5-6
Mali: Low: 0-2; Medium: 3; High: 4-5

[3] Bangladesh: Low: 0-1; Medium: 2; High: 3-10
Ethiopia: Low: 0-1; Medium: 2; High: 3-9
Mali: Low: 0-1; High: 2-6

Table 7.2. Support of women during pregnancy as reported by women and men in Bangladesh, Ethiopia, and Mali.

	Ethiopia				Bangladesh				Mali			
	women		men		women		men		women		men	
	n	Col %	n	Col %	n	Col %	n	Col %	n	Col %	n	Col %
Any help provided to woman during pregnancy	690	80.7			786	84.8			497	55.3		
Help from spouse during pregnancy	513	60.0	396	91.7	556	60.0	379	81.3	55	6.1	296	65.1
Help from mother-in-law during pregnancy	29	3.4			426	46.0			54	6.0		
Help from child during pregnancy	339	39.6			138	14.9			200	22.1		
Help from sibling during pregnancy	87	10.2			70	7.6			114	12.6		
Extent to which help received during pregnancy												
Low	583	68.2	236	54.6	321	34.6	194	41.6	417	46.4	162	35.6
High	272	31.8	196	45.4	606	65.4	272	58.4	482	53.6	293	64.4
Extent to which pregnant woman looked after during pregnancy												
Low	495	57.9	215	49.8	154	16.6	102	21.9	231	25.7	22	4.8
High	360	42.1	217	50.2	773	83.4	364	78.1	668	74.3	433	95.2

Household power dynamics

Couple communication

Table 7.3 outlines women's and men's reported communication with their spouse about a range of topics including family planning, antenatal care, delivery, preterm birth, nutrition, and child health. A summary index, which aggregated women's and men's responses across six communication topics, was used to assess the extent of recent couple communication on health-related topics. Scores were categorized into low communication, medium communication, and high communication.[20]

In Bangladesh, 35% of women, but only 14% of men, reported high couple communication about health-related topics. This trend was reversed in Ethiopia and Mali, where a smaller percentage of women reported high couple communication than did men (16% vs. 27% in Ethiopia; 29% vs. 37% in Mali).

To further explore power dynamics in couple interactions, quality of communication was assessed by examining the extent to which couples had a difference of opinion with their spouse, the extent to which they shared their opinions with their spouse, and the extent to which they felt their opinion was valued by their spouse. In Bangladesh, 37% of women and 25% of men reported a great difference of opinion with their spouse. This trend was observed in Mali as well, where 50% of women and 41% of men said that they had a great amount of difference of opinion with their spouse. In Ethiopia, women's and men's responses were

[20] Response scales used in each country varied (Ethiopia: 0-4 using the hand scale, with higher scores reflecting greater communication; Bangladesh: 0-100 using the paisa scale, with higher scores reflecting greater communication; Mali: 1-4 using an ordinal scale, with higher scores reflecting greater communication). Summary communication scores were categorized in Ethiopia and Mali as low communication (0-8); medium communication (9-16); and high communication (17-24). In Bangladesh, scores were categorized as low communication (0-200); medium communication (201-400); and high communication (401-600).

similar (16% vs. 17% respectively). Sharing of one's opinion was high across participants, ranging from 73% in Ethiopia and Mali to 93% in Bangladesh (Table 7.3). While women's and men's responses in Bangladesh and Ethiopia were similar, a smaller percentage of women in Mali reported that they had shared their opinion to a great extent with their spouse (73%) than did men (84%).

While participants commonly described sharing their opinion, a smaller percentage of women and men felt that their opinion was highly valued by their spouse/partner. In Bangladesh, 89% of women and 92% of men felt that their opinion was highly valued by their spouse/partner . In contrast, only 61% of women and 71% of men in Ethiopia and 63% of women and 85% of men in Mali felt that their opinion was highly valued by their spouse/partner.

In addition, participants were asked separately about their communication about their most recent pregnancy with their spouse. Such communication varied across countries, with a large percentage of women and men in Bangladesh reporting high communication (88% and 81% respectively). In Ethiopia, in contrast, only 49% of women and 55% of men reported high communication about their most recent pregnancy with their spouse. Such communication varied across countries, with a large percentage of women and men in Bangladesh reporting high communication (88% and 81% respectively). In Ethiopia, in contrast, only 49% of women and 55% of men reported high communication about their most recent pregnancy with their spouse. In Mali, a large percentage of women (89%) and men (91%) also reported high levels of communication with their spouse during their most recent pregnancy.

Decision-making

Table 7.3 also summarizes primary decision-makers for key decisions made in the household. Participants responded that the woman alone, the man alone, the couple, or another decision-maker (e.g. family member, couple and family member together, spouse and family member together, etc.) was the primary decision-maker for each household decision. A summary index was constructed to measure who was involved as primary decision-makers for key household-level decisions (11 decisions in Bangladesh and Mali, 12 decisions in Ethiopia). These topics included:

- Buying soap
- Buying fish/meat
- Buying vegetables (Ethiopia only)
- Buying clothes
- Cooking
- Having sex
- Having children
- Number of children to have
- Using FP
- Delivery
- Care-seeking for self
- Care-seeking for child

Four versions of this summary index were constructed:

1. Decision-making made by the couple together: This assessed how many decisions were, according to either the woman or the man, made by the couple together. Scores

were categorized into low couple-level decision-making (0-4 decisions); medium (5-8 decisions); or high (9 or more decisions).

2. Decision-making made where women were involved either alone as the principal decision-maker ***or*** as a couple: This assessed how many decisions were, according to either the woman or the man, made where women were involved (either alone or as part of a couple-level decision). Scores were categorized into low woman-involved decision-making (0-4 decisions); medium (5-8 decisions); or high (9 or more decisions).
3. Decision-making made by women alone: This assessed how many decisions were, according to either the woman or the man, made by women alone. Scores were categorized into low woman-led decision-making (0-4 decisions); medium (5-8 decisions); or high (9 or more decisions).
4. Decision-making made by men alone: This assessed how many decisions were, according to either the woman or the man, made by men alone. Scores were categorized into low man-led decision-making (0-4 decisions); medium (5-8 decisions); or high (9 or more decisions).

A smaller percentage of women in Bangladesh reported high levels (9 or more decisions) of decision-making made by couples (5%) as compared to men (15%). This trend was also observed in Ethiopia, where 19% of women and 25% of men reported high levels of couple-led decision-making. In Mali, 99% of women and 96% of men reported low levels of couple-led decision-making (0-4 decisions).

Decision-making with women involved, either alone or as a couple, was more commonly reported by men in Bangladesh (53% reporting nine or more decisions with women involved) than women (21%). Women-involved decision-making was high in Ethiopia. Seventy-nine percent of women and 74% of men in Ethiopia reported that women were involved in nine or more decisions. In Mali, only 3% of women and men respectively reported high involvement of women in household decisions.

While high levels of male-dominated decision-making were not reported in Bangladesh or Ethiopia, male-dominated decision-making was more common in Mali. Twenty-four percent of women and 31% of men said that a high level of decisions (at least nine out of 11 decisions asked about) were made by men.

Tables

Table 7.3. Couple communication and decision-making as reported by women and men in Bangladesh, Ethiopia, and Mali.

	Ethiopia				Bangladesh				Mali			
	women		men		women		men		women		men	
	n	Col %	n	Col %	n	Col %	n	Col %	n	Col %	n	Col %
Recent communication about FP (last 6 months)												
Low	593	69.4	207	47.9	187	20.2	146	31.3	515	57.2	219	48.1
High	262	30.6	225	52.1	740	79.8	320	68.7	386	42.8	236	51.9
Recent communication about ANC (last 6 months)												
Low	600	70.2	253	58.6	256	27.6	163	35.0	365	40.5	159	34.9
High	255	29.8	179	41.4	671	72.4	303	65.0	536	59.5	296	65.1
Recent communication about delivery (last 6 months)												
Low	580	67.8	234	54.2	301	32.5	212	45.5	423	46.9	186	40.9
High	275	32.2	198	45.8	626	67.5	254	54.5	478	53.1	269	59.1
Recent communication about PTB (last 6 months)												
Low	804	94.0	379	87.7	479	51.7	365	78.3	708	78.6	336	73.8
High	51	6.0	53	12.3	448	48.3	101	21.7	193	21.4	119	26.2
Recent communication about nutrition (last 6 months)												
Low	423	49.5	196	45.4	142	15.3	108	23.2	383	42.5	168	36.9
High	432	50.5	236	54.6	785	84.7	358	76.8	518	57.5	287	63.1
Recent communication about child health (last 6 months)												
Low	296	34.6	120	27.8	185	20.0	213	45.7	286	31.8	116	25.5
High	559	65.4	312	72.2	742	80.0	253	54.3	614	68.2	339	74.5
Couple communication index:												
Low - 0-8	222	26.0	88	20.4	158	17.0	117	25.1	175	19.4	65	14.3
Medium - 9-16	495	57.9	228	52.8	448	48.3	284	60.9	464	51.3	220	48.4
High - 17-24	138	16.1	116	26.9	321	34.6	65	13.9	265	29.3	170	37.4
Difference of opinion with spouse/partner												
Low	718	84.0	360	83.3	589	63.5	351	75.3	447	49.9	266	58.6
High	137	16.0	72	16.7	338	36.5	115	24.7	449	50.1	188	41.4
Extent to which share opinion with spouse/partner												
Low	218	25.5	115	26.6	65	7.0	34	7.3	247	27.5	71	15.6
High	637	74.5	317	73.4	862	93.0	432	92.7	650	72.5	384	84.4
Extent to which feel opinion valued by spouse/partner												
Low	337	39.4	127	29.4	100	10.8	38	8.2	330	36.7	68	15.0
High	518	60.6	305	70.6	827	89.2	428	91.8	568	63.3	386	85.0
Communication about pregnancy during last pregnancy												
Low	437	51.1	196	45.4	116	12.5	91	19.5	97	10.8	43	9.5
High	418	48.9	236	54.6	811	87.5	375	80.5	803	89.2	412	90.5
Primary decision-maker about buying soap												
Wife	465	54.4	163	37.7	424	45.7	248	53.2	265	29.4	104	22.9
Husband	115	13.5	99	22.9	379	40.9	125	26.8	557	61.9	325	71.6
Couple	233	27.3	145	33.6	61	6.6	80	17.2	24	2.7	13	2.9
Other	42	4.9	25	5.8	63	6.8	13	2.8	54	6.0	12	2.6
Primary decision-maker about buying fish/meat												
Wife	26	3.0	6	1.4	222	23.9	90	19.3	146	16.2	50	11.0
Husband	659	77.1	330	76.4	549	59.2	266	57.1	652	72.4	374	82.2
Couple	160	18.7	95	22.0	69	7.4	91	19.5	19	2.1	8	1.8
Other	10	1.2	1	0.2	87	9.4	19	4.1	84	9.3	23	5.1
Primary decision-maker about buying vegetables												
Wife	628	73.5	289	66.9								
Husband	53	6.2	52	12.0								
Couple	160	18.7	90	20.8								
Other	14	1.6	1	0.2								
Primary decision-maker about buying clothes												
Wife	87	10.2	30	6.9	296	31.9	135	29.0	178	19.8	51	11.2
Husband	201	23.5	112	25.9	480	51.8	131	28.1	628	69.7	358	78.7
Couple	563	65.8	290	67.1	110	11.9	185	39.7	46	5.1	32	7.0
Other	4	0.5			41	4.4	15	3.2	49	5.4	14	3.1
Primary decision-maker about cooking												
Wife	765	89.5	349	80.8	665	71.7	309	66.3	458	50.8	211	46.4
Husband	6	0.7	9	2.1	119	12.8	46	9.9	337	37.4	212	46.6
Couple	78	9.1	74	17.1	53	5.7	90	19.3	25	2.8	14	3.1
Other	6	0.7			90	9.7	21	4.5	81	9.0	18	4.0
Primary decision-maker about having sex												
Wife	16	1.9	16	3.7	16	1.7	3	0.6	177	19.6	76	16.7
Husband	456	53.3	159	36.8	562	60.6	110	23.6	516	57.3	236	51.9

	Ethiopia				Bangladesh				Mali			
	women		men		women		men		women		men	
	n	Col %	n	Col %	n	Col %	n	Col %	n	Col %	n	Col %
Couple	382	44.7	256	59.3	344	37.1	353	75.8	166	18.4	133	29.2
Other	1	0.1	1	0.2	5	0.5	146	31.3	42	4.7	10	2.2
Primary decision-maker about having children												
Wife	137	16.0	20	4.6	100	10.8	24	5.2	115	12.8	61	13.4
Husband	72	8.4	29	6.7	314	33.9	41	8.8	436	48.4	206	45.3
Couple	644	75.3	382	88.4	507	54.7	394	84.5	144	16.0	109	24.0
Other	2	0.2	1	0.2	6	0.6	7	1.5	206	22.9	79	17.4
Primary decision-maker about number of children to have												
Wife	107	12.5	14	3.2	95	10.2	10	2.1	86	9.5	28	6.2
Husband	63	7.4	34	7.9	305	32.9	34	7.3	377	41.8	218	47.9
Couple	683	79.9	381	88.2	522	56.3	415	89.1	99	11.0	88	19.3
Other	2	0.2	3	0.7	5	0.5	7	1.5	339	37.6	121	26.6
Primary decision-maker about using FP												
Wife	322	37.7	100	23.1	317	34.2	87	18.7	265	29.4	114	25.1
Husband	40	4.7	33	7.6	211	22.8	27	5.8	355	39.4	200	44.0
Couple	485	56.7	298	69.0	391	42.2	351	75.3	82	9.1	59	13.0
Other	8	0.9	1	0.2	8	0.9	1	0.2	199	22.1	82	18.0
Primary decision-maker about delivery												
Wife	211	24.7	30	6.9	147	15.9	22	4.7	234	26.0	75	16.5
Husband	47	5.5	49	11.3	411	44.3	57	12.2	563	62.5	313	68.8
Couple	590	69.0	352	81.5	337	36.4	378	81.1	27	3.0	45	9.9
Other	7	0.8	1	0.2	32	3.5	9	1.9	77	8.5	22	4.8
Primary decision-maker about care-seeking for self												
Wife	157	18.4	136	31.5	227	24.5	127	27.3	109	12.1	19	4.2
Husband	182	21.3	83	19.2	515	55.6	125	26.8	732	81.2	398	87.5
Couple	512	59.9	210	48.6	163	17.6	186	39.9	13	1.4	23	5.1
Other	4	0.5	3	0.7	22	2.4	28	6.0	47	5.2	15	3.3
Primary decision-maker about care-seeking for child												
Wife	50	5.8	14	3.2	278	30.0	84	18.0	94	10.4	26	5.7
Husband	51	6.0	41	9.5	402	43.4	79	17.0	732	81.2	386	84.8
Couple	752	88.0	372	86.1	222	23.9	297	63.7	20	2.2	27	5.9
Other	2	0.2	5	1.2	25	2.7	6	1.3	55	6.1	16	3.5
Decision-making by couple: Summary index (categorical)												
Low (0-4 decisions)	259	30.3	90	20.8	661	71.3	111	23.8	890	98.5	435	95.6
Medium (5-8 decisions)	431	50.4	233	53.9	218	23.5	287	61.6	12	1.3	18	4.0
High (9 or more decisions)	165	19.3	109	25.2	48	5.2	68	14.6	2	0.2	2	0.4
Decision-making with women involved (alone or in couple): Summary index: Summary index (categorical)												
Low (0-4 decisions)	9	1.1	3	0.7	295	31.8	22	4.7	682	75.4	338	74.3
Medium (5-8 decisions)	169	19.8	108	25.0	436	47.0	196	42.1	192	21.2	104	22.9
High (9 or more decisions)	677	79.2	321	74.3	196	21.1	248	53.2	30	3.3	13	2.9
Decision-making by women: Summary index (categorical)												
Low (0-4 decisions)	626	73.2	381	88.2	681	73.5	414	88.8	750	83.0	409	89.9
Medium (5-8 decisions)	218	25.5	50	11.6	225	24.3	52	11.2	138	15.3	45	9.9
High (9 or more decisions)	11	1.3	1	0.2	21	2.3	--	--	16	1.8	1	0.2
Decision-making by men: Summary index (categorical)												
Low (0-4 decisions)	770	90.1	380	88.0	501	54.0	411	88.2	206	22.8	70	15.4
Medium (5-8 decisions)	77	9.0	51	11.8	305	32.9	48	10.3	483	53.4	244	53.6
High (9 or more decisions)	8	0.9	1	0.2	121	13.1	7	1.5	215	23.8	141	31.0

Mental health and household environment

Tables 7.4 and 7.5 describe women's, men's, and adolescent boys' and girls' mental health and household environments in Bangladesh, Ethiopia, and Mali.

Mental health

Participants were asked to rate their satisfaction with life; recent levels of happiness, worry, and stress; and levels of happiness, worry, and stress during the most recent pregnancy. Responses, shown in Table 7.4 and 7.5, facilitate comparisons across participant type and study setting.

In Bangladesh, high levels of life satisfaction were commonly reported among women, men, and adolescents (95% for women; 89% for men; 89% for adolescent boys; 97% for

adolescents). While 87% of women and 79% of men reported high levels of happiness over the last three months, 82% of adolescent boys and 93% of adolescent girls reported similar levels of recent happiness. In comparison, 42% of women and 26% of men reported high levels of worry. High levels of worry were reported by 26% of adolescent girls and 19% of adolescent boys. Twenty-two percent of women and 24% of men reported high levels of stress. During their most recent pregnancy, nearly three quarters of women (74%) and men (73%) reported high levels of happiness. At the same time, 12% and 18% of women and men respectively described high levels of worry during the most recent pregnancy.

In Ethiopia, satisfaction with life was less commonly stated as high (43% of women and 47% of men). Similar levels were reported by adolescent boys (39%) and adolescent girls (43%). Approximately half of women (51%), men (50%), and adolescents (boys: 46%; girls: 51%) reported high levels of happiness over the last three months. In contrast, only 13% of women, 7% of men, 6% of adolescent boys, and 12% of adolescent girls reported high levels of worry. Only 5% of women and 3% of men and adolescents reported high levels of stress in the last three months. Happiness during the most recent pregnancy was reported by more than half of women (57%) and men (52%) in Ethiopia. High levels of worry during the most recent pregnancy were not common (12% of women; 16% of men).

In Mali, high levels of life satisfaction were commonly reported (89% of women; 88% of men; 94% of adolescent boys; 93% of adolescent girls). High levels of happiness were also common (91% of women; 89% of men; 95% of adolescent boys; 91% of adolescent girls). At the same time, 58% of women and 70% of men reported high levels of worry in the last three months. Fifty-two percent of adolescents (boys: 51%; girls: 53%) reported high levels of worry as well in the last three months. Happiness during the most recent pregnancy was also high (92% of women and 90% of men). At the same time, women and men also reported high levels of worry during their most recent pregnancy (68% and 78% respectively).

Household environment during pregnancy

To assess bounded descriptive norms related to the household environment during women's pregnancies, participants were asked to describe how many pregnant women, out of 10, in their communities experience compassion and stress in the household. In Bangladesh, 39% of women and 35% of men reported that ***seven or more pregnant women experience compassion in their household***. In Ethiopia, only 19% of women and 26% of men reported that seven or more pregnant women experience compassion in their household. In Mali, 17% of women and 35% of men reported that at least seven out of ten pregnant women experience compassionate households.

In contrast, stress in the households of pregnant women was considered less common. In Bangladesh, only 7% of women and 8% of men reported that at least seven of ten pregnant women experience stress in the household. In Ethiopia, percentages were lower (1% of women and 5% of men). In Mali, a larger percentage of women (19%) and men (11%) reported that ***seven or more pregnant women experience stress in their household.***

Tables

Table 7.4. Mental health and household environment as reported by women and men in Bangladesh, Ethiopia, and Mali.

	Ethiopia				Bangladesh				Mali			
	women		men		women		men		women		men	
	n or mean	Col % or SD	n or mean	Col % or SD	n or mean	Col % or SD	n or mean	Col % or SD	n or mean	Col % or SD	n or mean	Col % or SD
Life satisfaction												
Low	492	57.5	229	53.0	48	5.2	53	11.4	99	11.0	55	12.1
High	363	42.5	203	47.0	879	94.8	413	88.6	801	89.0	400	87.9
How happy over last three months												
Low	416	48.7	218	50.5	120	12.9	97	20.8	83	9.2	52	11.4
High	439	51.3	214	49.5	807	87.1	369	79.2	818	90.8	403	88.6
How worried over last three months												
Low	745	87.1	401	92.8	542	58.5	347	74.5	380	42.2	139	30.5
High	110	12.9	31	7.2	385	41.5	119	25.5	521	57.8	316	69.5
How stressed over last three months												
Low	809	94.6	421	97.5	721	77.8	354	76.0				
High	46	5.4	11	2.5	206	22.2	112	24.0				
To what extent does what others think matter to you?												
Low	769	89.9	363	84.0	348	37.5	224	48.1				
High	86	10.1	69	16.0	579	62.5	242	51.9				
How happy during most recent pregnancy												
Low	370	43.3	209	48.4	246	26.5	128	27.5	73	8.1	45	9.9
High	485	56.7	223	51.6	681	73.5	338	72.5	828	91.9	410	90.1
How worried during most recent pregnancy												
Low	756	88.4	365	84.5	813	87.7	383	82.2	289	32.1	101	22.2
High	99	11.6	67	15.5	114	12.3	83	17.8	612	67.9	354	77.8
Among 10 pregnant women how many experience compassion in household												
0-3	227	26.5	69	16.0	116	12.5	51	10.9	285	31.5	78	17.1
4-6	462	54.0	249	57.6	447	48.2	254	54.5	319	35.3	142	31.2
7+	166	19.4	114	26.4	364	39.3	161	34.5	150	16.6	159	34.9
Don't know	0	0.0	0	0.0	0	0.0	0	0.0	150	16.6	76	16.7
Among 10 pregnant women how many experience stress in household												
0-3	693	81.1	286	66.2	500	53.9	177	38.0	306	33.8	197	43.3
4-6	150	17.5	125	28.9	362	39.1	250	53.6	258	28.5	108	23.7
7+	12	1.4	21	4.9	65	7.0	39	8.4	167	18.5	52	11.4
Don't know	0	0.0	0	0.0	0	0.0	0	0.0	173	19.1	98	21.5

Table 7.5. Mental health and household environment as reported by adolescents in Bangladesh, Ethiopia, and Mali.

	Ethiopia						Bangladesh						Mali					
	Adolescent boys		Adolescent girls		Total adolescents		Adolescent boys		Adolescent girls		Total adolescents		Adolescent boys		Adolescent girls		Total adolescents	
	n	Col %	n	Col %	n	Col %	n	Col %	n	Col %	n	Col %	n	Col %	n	Col %	n	Col %
Life satisfaction																		
Low	260	60.9	254	57.2	514	59.0	49	10.6	14	3.0	63	6.8	28	6.4	34	7.3	62	6.9
High	167	39.1	190	42.8	357	41.0	415	89.4	451	97.0	866	93.2	408	93.6	430	92.7	838	93.1
How happy over last three months																		
Low	229	53.6	216	48.6	445	51.1	85	18.3	35	7.5	120	12.9	24	5.5	40	8.6	64	7.1
High	198	46.4	228	51.4	426	48.9	379	81.7	430	92.5	809	87.1	412	94.5	424	91.4	836	92.9
How worried over last three months																		
Low	403	94.4	390	87.8	793	91.0	375	80.8	345	74.2	720	77.5	215	49.3	220	47.3	435	48.3
High	24	5.6	54	12.2	78	9.0	89	19.2	120	25.8	209	22.5	221	50.7	245	52.7	466	51.7
How stressed over last three months																		
Low	414	97.0	430	96.8	844	96.9	386	83.2	407	87.5	793	85.4						
High	13	3.0	14	3.2	27	3.1	78	16.8	58	12.5	136	14.6						
To what extent does what others think matter to you?																		
Low	376	88.1	383	86.3	759	87.1	212	45.7	207	44.5	419	45.1						
High	51	11.9	61	13.7	112	12.9	252	54.3	258	55.5	510	54.9						
Among 10 girls, how many experience compassion in household																		
0-3	79	18.5	123	27.7	202	23.2	71	15.3	38	8.2	109	11.7	73	16.7	93	20.0	166	18.4
4-6	190	44.5	208	46.8	398	45.7	240	51.7	162	34.9	402	43.3	167	38.3	195	41.8	362	40.1
7+	158	37.0	113	25.5	271	31.1	153	33.0	264	56.9	417	44.9	131	30.0	130	27.9	261	28.9
Don't know	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	65	14.9	48	10.3	113	12.5
Among 10 boys, how many experience compassion in household																		
0-3	86	20.1	145	32.7	231	26.5	46	9.9	62	13.4	108	11.6	66	15.1	97	20.8	163	18.1
4-6	195	45.7	203	45.7	398	45.7	238	51.3	122	26.3	360	38.8	162	37.2	185	39.7	347	38.5
7+	146	34.2	96	21.6	242	27.8	180	38.8	280	60.3	460	49.6	149	34.2	130	27.9	279	30.9
Don't know	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	59	13.5	54	11.6	113	12.5
Among 10 girls, how many experience stress in household																		
0-3	321	75.2	305	68.7	626	71.9	189	40.7	307	66.2	496	53.4	221	50.7	220	47.2	441	48.9
4-6	99	23.2	118	26.6	217	24.9	240	51.7	133	28.7	373	40.2	103	23.6	129	27.7	232	25.7
7+	7	1.6	21	4.7	28	3.2	35	7.5	24	5.2	59	6.4	34	7.8	57	12.2	91	10.1
Don't know	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	78	17.9	60	12.9	138	15.3
Among 10 boys, how many experience stress in household																		
0-3	292	68.4	316	71.2	608	69.8	207	44.6	331	71.3	538	58.0	211	48.4	212	45.5	423	46.9
4-6	125	29.3	114	25.7	239	27.4	229	49.4	106	22.8	335	36.1	107	24.5	126	27.0	233	25.8
7+	10	2.3	14	3.2	24	2.8	28	6.0	27	5.8	55	5.9	45	10.3	54	11.6	99	11.0
Don't know	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	73	16.7	74	15.9	147	16.3
Total	427	100	444	100	871	100	464	100	464	100	928	100	436	100	466	100	902	100.0

Chapter Eight: Reproductive infections and malaria

This chapter explores women's self-reported symptoms of reproductive tract and urinary tract infections (RTI/UTI) during pregnancy, treatment seeking patterns, insecticide-treated bed net (ITN) ownership and use during pregnancy, and intermittent preventive treatment of malaria in pregnancy (IPTp) for pregnant women in all three study settings.

RTI/UTI during pregnancy: Self-report and treatment seeking patterns

We adopted the World Health Organization's syndromic approach to define whether a woman in this study experienced an RTI/UTI during her last pregnancy (Kafle & Bhattarai, 2016). If a woman reported experiencing two or more symptoms from among a list of twelve (Table 8.1), they were considered to have had an RTI/UTI during their last pregnancy. Three symptoms overlapped both RTI and UTI: burning/pain during urination; abdominal pain; and pain and swelling in the groin. RTI specific symptoms included: white vaginal discharge; pain during intercourse; lower back pain; foul smelling vaginal discharge; genital ulcers; genital itching; and excessive bleeding. UTI specific symptoms include desire for frequent urination and fever.

Table 8.1: Symptoms of RTI/UTI used for syndromic approach to self-reported RTI/UTI during last pregnancy. Two or more reported symptoms is considered

UTI	Both	RTI
Desire for frequent urination	Burning/pain during urination	White vaginal discharge
Fever	Abdominal pain	Pain during intercourse
	Pain and swelling in groin	Lower back pain
		Foul smelling vaginal discharge
		Genital ulcers
		Genital itching
		Excessive bleeding

Table 8.2 describes female participant reports of RTI/UTIs during their last pregnancy and treatment seeking patterns in the three study settings. Men were not asked questions about RTI/UTIs during their partner's last pregnancy.

Bangladesh

Equal proportions of women surveyed in Bangladesh self-reported having either an RTI or a UTI during their last pregnancy (30.4% reported 2 or more RTI symptoms during their last pregnancy; 30.4% reported 2 or more UTI symptoms during their last pregnancy). If we combine the UTI and RTI symptoms into a single index, the proportion of women who reported having two or more symptoms of UTI and RTI increases to (49.5%). In other words, there are additional women who did not report having two or more symptoms of either UTI or RTI but had one UTI symptom and one RTI symptom during their last pregnancy. The symptom reported by the highest proportion of women surveyed (49.8%) was desire for frequent urination during their last pregnancy, followed by white discharge from vagina (44.2%) and abdominal pain (26.8%). Among the 68.8% of women who reported at least one UTI/RTI symptom during their last pregnancy, 67.9% of them did not seek treatment.

Ethiopia

More women surveyed in Ethiopia self-reported having experienced two or more symptoms of a UTI than an RTI during their last pregnancy (55.6% experienced a UTI during their last pregnancy; 40.9% experienced an RTI during their last pregnancy). If we combine the UTI and RTI symptoms into a single index, the proportion of women who reported having two or more symptoms of UTI and RTI increases to (67.5%). In other words, there are additional women who did not report having two or more symptoms of either UTI or RTI during their last pregnancy but had one UTI symptom and one RTI symptom during their last pregnancy. The symptom reported by the highest proportion of women surveyed was desire for frequent urination during their last pregnancy (65.4%), followed by lower back pain (46.2%) and fever (43.7%). Among the 82.9% of women who experienced at least one symptom of UTI/RTI during their last pregnancy, 60.5% did not seek treatment.

Mali

Among women surveyed in Mali, more self-reported having two or more RTI symptoms during their last pregnancy than UTI symptoms (60.6% reported two or more RTI symptoms during their last pregnancy; 56.0% reported two or more UTI symptoms during their last pregnancy). If we combine the UTI and RTI symptoms into a single index, the proportion of women who reported having two or more symptoms of UTI and RTI increases to (72.1%). In other words, there are additional women who did not report having two or more symptoms of either UTI or RTI during their last pregnancy but had one UTI symptom and one RTI symptom during their last pregnancy. The symptom reported by the highest proportion of women surveyed was desire for frequent urination during pregnancy (55.4%) followed by abdominal pain (52.1%), and white discharge from their vagina (47.7%). Among the 82.3% of women who reported experiencing at least one symptom of UTI/RTI during their last pregnancy, only 17.4% reported that they did not seek treatment; 82.6% of women who reported experiencing at least one UTI/RTI symptom during their last pregnancy sought treatment.

Tables

Table 8.2. Reproductive and urinary tract infections during pregnancy reported by women (15-49 years) from Bangladesh, Ethiopia and Mali.

		Women	
Profile	BANGLADESH N=927	ETHIOPIA N =855	MALI N =904
	n (%)	n (%)	n (%)
Self-reported individual RTI and UTI symptoms			
Burning during urination	128 (13.8)	266 (31.1)	298 (33.0)
Desire for frequent urination	462 (49.8)	559 (65.4)	501 (55.4)
White discharge from vagina	410 (44.2)	136 (15.9)	429 (47.7)
Itching in private parts	109 (11.8)	89 (10.4)	351 (38.8)
Abdominal pain	248 (26.8)	230 (26.9)	471 (52.1)
Pain during intercourse	92 (9.9)	143 (16.7)	248 (27.4)
Excessive menstrual bleeding	9 (1.0)	40 (4.7)	-
Lower back pain	67 (7.2)	395 (46.2)	392 (43.4)
Foul smelling discharge from vagina	14 (1.5)	34 (4.0)	232 (25.7)
Painful or painless genital ulcer	5 (0.5)	32 (3.7)	127 (14.1)
Pain or swelling in groin	10 (1.1)	70 (8.2)	84 (9.3)
Fever	110 (11.9)	374 (43.7)	395 (43.7)
Self-reported RTI during pregnancy (2 or more RTI symptoms)			
Yes	282 (30.4)	350 (40.9)	548 (60.6)
Self-reported UTI during pregnancy (2 or more RTI symptoms)			
Yes	282 (30.4)	475 (55.6)	506 (56.0)
Self-reported RTI/UTI during pregnancy (2 or more symptoms) [1]			
Yes	459 (49.5)	577 (67.5)	652 (72.1)
Number of self-reported RTI/UTI symptoms			
No symptoms	289 (31.2)	146 (17.1)	160 (17.7)
1 symptom	179 (19.3)	132 (15.4)	92 (10.2)
2 symptoms	188 (20.3)	179 (20.9)	119 (13.2)
3 symptoms	117 (12.6)	127 (14.9)	74 (8.2)
4+ symptoms	154 (16.6)	271 (31.7)	459 (50.8)
Was treatment sought if at least one symptom reported? [2]			
No treatment sought	433 (67.9)	429 (60.5)	105 (17.4)
Treatment sought	205 (32.1)	280 (39.5)	497 (82.6)

Notes:
[1] In Mali, six women's responses were missing, which was recoded as 0/no symptom.
2 In Mali, n=142 did not answer

Malaria: ITN ownership, ITN use, and IPTp during pregnancy

Table 8.3 describes insecticide-treated bed net (ITN) ownership and use, and intermittent preventive treatment of malaria in pregnancy (IPTp) for pregnant women in all three study settings, as reported by women and men.

Bangladesh

Men and women in Bangladesh were not asked about malaria or bed nets because malaria is not endemic to the region of interest in this project.

Ethiopia

Self-reports of having experienced malaria during the last pregnancy were low among women and men in the region of interest in Ethiopia (1.2% of women; 3.0% of men reported their wife experienced malaria during their last pregnancy). Roughly a third of respondents (36.1% of women; 32.2% of men) reported that their household did not own one bed net. Women reported higher proportions of households that owned 3 or more nets (18.0% of women), whereas only 13.4% of men reported their household owned 3 or more nets. Among respondents that had at least one net, 50.6% of women and 77.8% of men reported that the female respondent or partner of male respondents slept under a bed net the previous night.

Fewer women than men in Ethiopia reported that a bed net was received during their most recent pregnancy (28.8% of women; 55.1% of men). Among all female respondents (i.e., not just those who reported owning at least one bed net), 42.6% said they never slept under a bet net during their last pregnancy. By contrast, 38.1% said they 'always' slept under a net during their last pregnancy. Men were not asked this question. Fewer women than men (6.2% of women; 29.6% of men) reported that the female respondent or partner of the male respondent received IPTp during the last pregnancy.

Mali

Self-reports of having experienced malaria during the last pregnancy were high among women and men in the region of interest in Mali (53.1% of women; 55.8% of men reported their wife experienced malaria during their last pregnancy). Nearly all respondents (97.5% of women; 96.5% of men) reported that their household owned at least one bed net. Over half of households, according to 52.0% of women and 67.3% of men, owned three or more bed nets. Among respondents that had at least one net, 95.1% of women and 95.2% of men reported that the female respondent or the partner of the male respondent slept under a bed net the previous night.

Fewer women than men in Mali reported that a bed net was received during their most recent pregnancy (65.6% of women; 82.0% of men). Among all female respondents (i.e., not just those who reported owning at least one bed net), 94.8% said they 'always' slept under a bet net during their last pregnancy. Men were not asked this question. Equal proportions of women and men in Mali (81.6% of women; 81.5% of men) reported that the female respondent or partner of the male respondents received IPTp during the last pregnancy.

Tables

Table 8.3. Malaria reported by women (15-49 years) and men (18-55 years) from Bangladesh, Ethiopia and Mali

	Women			Men		
Profile	BANGLADESH N=927	ETHIOPIA N =855	MALI N =904	BANGLADESH N =468	ETHIOPIA N=432	MALI N=455
	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)
Experienced malaria during last pregnancy (self report)						
Yes	-	10 (1.2)	480 (53.1)	-	13 (3.0)	254 (55.8)
Number of ITN bed nets reported in household						
0 nets	-	309 (36.1)	23 (2.5)	-	139 (32.2)	16 (3.5)
1 net	-	186 (21.8)	104 (11.5)	-	96 (22.2)	23 (5.1)
2 nets	-	206 (24.1)	307 (34.0)	-	139 (32.2)	110 (24.2)
3+ nets	-	154 (18.0)	470 (52.0)	-	58 (13.4)	306 (67.3)
Did female respondent/partner sleep under a bed net the previous night?						
Yes	-	428 (50.06)	860 (95.1)	-	228 (77.8)	433 (95.2)
Did household receive a bed net during most recent pregnancy?						
Yes	-	246 (28.8)	593 (65.6)	-	238 (55.1)	373 (82.0)
Frequency of sleeping under bed net during last pregnancy						
Never	-	364 (42.6)	20 (2.2)	-	-	-
Sometimes	-	165 (19.3)	27 (3.0)	-	-	-
Always	-	326 (38.1)	857 (94.8)	-	-	-
Did female respondent/partner receive IPTp during most recent pregnancy?						
Yes	-	53 (6.2)	738 (81.6)	-	128 (29.6)	371 (81.5)

Multivariate models

Determinants of self-reported RTI/UTI during last pregnancy

Bangladesh

Among women surveyed in Bangladesh, neither age, education, nor receiving a home visit from a health worker was associated with reporting a RTI/UTI during their last pregnancy in adjusted regression models (Table 8.4). Women who said they knew where to obtain a family planning method had 31% decreased odds of reporting an RTI/UTI during their last pregnancy (OR: 0.69; 95% CI: 0.48-1.00; $p<0.05$) compared to women who did not know where to obtain a family planning method. Women who reported using soap and water to wash their hands, as compared to women who either said they did not wash their hands or used ash and water had 37% decreased odds of reporting RTI/UTIs during their last pregnancy (OR: 0.63; 0.40-1.00; $p<0.05$). Exposure to mass media messaging at least once per week was associated with 33% increased odds of reporting an RTI/UTI during their last pregnancy as compared to women who did not see or hear radio or TV messaging at least once per week (OR: 1.33; 95% CI: 0.99-1.77; $p<0.05$). Holding inequitable attitudes toward a

suite of questions about either tolerance toward gender-based violence or domestic roles were both associated with increasing odds of reporting RTI/UTI during their last pregnancy as compared to women who held more gender-equitable views (gender-based violence: OR: 1.48, 1.45; 95% CI: 1.05-2.07, 1.01-2.09; P<0.05, p<0.5; domestic roles: OR: 1.44, 1.98; 95% CI: 1.02-2.04, 1.35-2.90; p<0.05, p<0.001). Women who expressed higher concern for what people think of them had decreased odds for reporting RTI/UTI during their last pregnancy, as compared to women who expressed less concern for what others think of them (OR: 0.63, 0.72; 95% CI: 0.43-0.91, 0.41-1.26; p<0.01, p<0.1).

Ethiopia

Among women surveyed in Ethiopia, neither age, education, nor having received a visit from a health worker in the past six months was associated with self-reported RTI/UTI during the last pregnancy in adjusted regression models (see Table 8.5). Exposure to mass media messaging at least once week increased the odds of self-reporting a RTI/UTI during their last pregnancy more than two-fold in adjusted models (OR: 2.03; 95% CI: 1.42-2.91; p<0.001). Women who are 'high' on the vulnerability index, as compared to women who reported lower vulnerability, had 2.51-times increased odds of self-reporting an RTI/UTI during their last pregnancy (OR: 2.51; 95% CI: 1.79 – 3.53; p<0.001). Women who expressed support of gender-discriminatory statements about sexual relationships or who agreed with the statement that marrying girls young can resolve financial problems had 72% and 90% increased odds of reporting a RTI/UTI during their last pregnancy as compared to women who expressed more gender-equitable opinions (OR: 1.72; 95% CI: 1.22-2.44; p<0.01; and OR: 1.90; 95% CI: 1.28-2.83; p<0.001).

Mali

Among women surveyed in Mali, neither level of education nor exposure to mass media messaging were not associated with whether a woman reported a RTI/UTI during their last pregnancy in the adjusted regression model (Table 8.6). However, younger women have higher odds of self-reporting a RTI/UTI during their last pregnancy and each successive age group (e.g. 25-29 years, 30-34 years, and 35-49 years) had statistically significant decreased odds of reporting a RTI/UTI during their last pregnancy as compared to the reference group of 15-24 year olds (OR: 0.68, 0.57, 0.50; 95% CI: 0.51-1.02, 0.37-0.88, 0.32-0.78; p<0.1, p<0.1, p<0.05). Women who ranked higher on the vulnerability index had 49% increased odds of reporting a RTI/UTI during their last pregnancy as compared to women who were lower on the vulnerability index (OR: 1.49; 95% CI: 1.08 – 2.05; p<0.01). Holding a gender-discriminatory opinion regarding whether women who have sex before marriage deserve respect is associated with 38% higher odds of reporting a RTI/UTI during their last pregnancy (OR: 1.38; 95% CI: 1.01-1.88; p<0.05). Having received a home-visit by a health worker was significantly associated with 194% increased odds of reporting a UTI/RTI during their last pregnancy (OR: 2.94; 95% CI: 2.05-4.21; p<0.001).

Tables

Table 8.4. Factors associated with self-reported UTI/RTI during last pregnancy among women surveyed in Bangladesh.

Explanatory variables of interest	Unadjusted OR	Adjusted OR
Age (Ref: 15-19)		
20-24	1.10 (0.74 – 1.64)	1.13 (0.74 - 1.71)
25-29	1.04 (0.71 – 1.54)	1.12 (0.74 - 1.67)
30-45	1.17 (0.76 – 1.79)	1.21 (0.77 – 1.88)
Education level (Ref: None/non-formal)		
Primary	0.76 (0.45 – 1.30)	0.80 (0.46 - 1.39)
Secondary or higher	0.99 (0.61 – 1.60)	1.23 (0.74 - 2.05)
Knows where to obtain FP methods (Ref: No)		
Yes	0.59** (0.42 – 0.84)	0.69* (0.48 - 1.00)
Uses soap to wash hands (Ref: Does not use soap)		
Yes	0.69^ (0.45 – 1.06)	0.63* (0.40 - 1.00)
Exposure to mass media (Ref: None)		
At least 1x/week	1.22 (0.93 – 1.60)	1.33* (0.99 – 1.77)
Health worker home-visits in past 6 months (Ref: None)		
At least once	0.96 (0.72 – 1.29)	1.02 (0.75 - 1.38)
Level of concern for what other people think of me (Ref: Low)		
Low-medium	0.80 (0.58 – 1.10)	0.94 (0.67 - 1.31)
Medium-high	0.66* (0.46 – 0.94)	0.63** (0.43 - 0.91)
High	0.75 (0.44 – 1.29)	0.72^ (0.41 - 1.26)
Discriminatory gender norms: Violence domain (Ref: Low support)		
Medium support	1.69*** (1.23 – 2.33)	1.48* (1.05 - 2.07)
High support	1.77*** (1.29 – 2.44)	1.45* (1.01 - 2.09)
Discriminatory gender norms: Household responsibilities (domestic chores and daily life) (Ref: Low support)		
Medium support	1.48** (1.08 – 2.02)	1.44* (1.02 - 2.04)
High support	1.98*** (1.43 – 2.74)	1.98*** (1.35 - 2.90)

95% confidence interval in parentheses
*** p<0.001, ** p<0.01, * p<0.05, ^ p<0.1

Table 8.5. Factors associated with self-reported UTI/RTI during last pregnancy among women surveyed in Ethiopia

Explanatory variables of interest	Unadjusted OR	Adjusted OR
Age (Ref: 15-24)		
25-29	0.82 (0.54 – 1.24)	0.79 (0.55 - 1.24)
30-34	0.88 (0.57 – 1.36)	0.86 (0.52 - 1.42)
35-49	0.92 (0.60 – 1.41)	0.81 (0.48 - 1.37)
Education level (Ref: None/non-formal)		
Primary	1.15 (0.83 – 1.59)	1.20 (0.82 - 1.77)
Secondary or higher	0.96 (0.63 – 1.47)	1.00 (0.60 - 1.68)
Vulnerability Index (Ref: Low)		
High	2.82*** (2.03 – 3.91)	2.51*** (1.79 – 3.53)
Discriminatory gender norms: Sexual relationships domain (Ref: Low support)		
High support	2.03*** (1.47 – 2.81)	1.72** (1.22 - 2.44)
Belief that marrying girls young can resolve financial problems (Ref: Disagree)		
Agree	1.92*** (1.32 – 2.80)	1.90*** (1.28 - 2.83)
Exposure to mass media (Ref: None)		
At least 1x/week	1.96*** (1.40 – 2.73)	2.03*** (1.42 – 2.91)
Health worker home-visits in past 6 months (Ref: None)		
At least once	0.90 (0.67 – 1.22)	0.85 (0.61 - 1.17)

95% confidence interval in parentheses
*** p<0.001, ** p<0.01, * p<0.05, ^ p<0.1

Table 8.6. Factors associated with self-reported UTI/RTI during last pregnancy among women surveyed in Mali

Explanatory variables of interest	Unadjusted OR	Adjusted OR
Age (Ref: 15-24)		
25-29	0.70^	0.68^
	(0.48 – 1.03)	(0.45 - 1.02)
30-34	0.57**	0.57*
	(0.38 – 0.85)	(0.37 - 0.88)
35-49	0.63**	0.50**
	(0.41 – 0.95)	(0.32 - 0.78)
Education level (Ref: None/non-formal)		
Primary	0.95	0.89
	(0.67 – 1.34)	(0.62 - 1.30)
Secondary or higher	1.21	1.05
	(0.69 – 2.11)	(0.58 - 1.92)
Vulnerability Index (Ref: Low)		
High	1.55**	1.49**
	(1.15 – 2.10)	(1.08 - 2.05)
Belief that a woman who has sex before she marr does not deserve respect (Ref: Disagree)		
Agree	1.23^	1.38*
	(0.92 – 1.66)	(1.01 – 1.88)
Exposure to mass media (Ref: None)		
At least 1x/week	0.84	0.80
	(0.58 – 1.23)	(0.53 - 1.22)
Health worker home-visits in past 6 months (Ref: None)		
At least once	2.90***	2.94***
	(2.06 – 4.07)	(2.05 – 4.21)

95% confidence interval in parentheses
*** p<0.001, ** p<0.01, * p<0.05, ^ p<0.1

Similarities and differences across the three study settings

RTI and UTI

Univariate characteristics

Proportions of women self-reporting UTI and self-reporting RTI during their last pregnancy (i.e., self-reporting at least two symptoms of either), women in Mali were highest (60.6% and 56.0%, respectively), followed by women in Ethiopia (55.6% and 40.9%, respectively), and finally women in Bangladesh (30.4% and 30.4%). When combining all symptoms together into a single index of RTI/UTI, the proportion of women who self-reported experiencing an RTI/UTI during their last pregnancy (i.e., 2 symptoms reported) increased by more than 10% in all three countries (Bangladesh: 49.5%; Ethiopia: 67.5%; Mali: 72.1%). The most commonly cited symptoms in all three countries tended to be desire for frequent urination, back and abdominal pain, and white discharge from the vagina. Lower proportions of women in each country, in general, self-reported symptoms such as excessive menstrual bleeding or painful or painless genital ulcers. Upon further analysis, half of women surveyed in Mali (50.8%) self-reported experiencing four or more symptoms of RTI/UTI during their last pregnancy. By contrast, far fewer women surveyed in both Bangladesh and Ethiopia self-reported experiencing four or more symptoms (16.6% of women in Bangladesh; 31.7% of women in Ethiopia). However, women in Mali reported seeking treatment if they experienced at least one symptom during their last pregnancy at least two-times higher than women in Bangladesh or Ethiopia; 82.6% of women who experienced at least one symptom sought treatment, whereas only 39.5% of women in Ethiopia and 32.1% of women in Bangladesh reported seeking treatment if they experienced at least one symptom of RTI or UTI.

Regression analyses

The variables included in the regression models differ by country based on their bivariate significance to the outcome of interest: self-reported experience of two or more symptoms in the combined RTI/UTI index of symptoms (dichotomized in analyses as ‘no’ or ‘yes’). We included standard socio-demographic variables unless they demonstrated in collinearity (e.g., parity and age were sometimes collinear) or they reduced the goodness of fit to such a degree that their contribution to the model worsened the ability of the model to explain the data. Nevertheless, several variables were consistent across models.

Age was not significantly associated with self-reported RTI/UTI during their last pregnancy in Bangladesh or Ethiopia, but a significant relationship between increasing age and decreased odds of reporting a RTI/UTI during their last pregnancy was observed in Mali. The youngest age group had higher odds of reporting having experienced a RTI/UTI during their last pregnancy.

Level of education did not show a significant relationship to self-reported RTI/UTI during the last pregnancy in any of the three study settings, in unadjusted or adjusted models.

A high degree of vulnerability (i.e., reported food insecurity, financial insecurity, housing insecurity, and experience with natural disasters) only showed significance to experiencing increased odds of reporting RTI/UTI during the last pregnancy in Ethiopia and Mali. In unadjusted models, high vulnerability was nearly three-fold higher in Ethiopia ($p<0.001$), but the statistical significance of this relationship decreased in the adjusted models. In Mali, high vulnerability was significantly associated with increased odds of reporting an RTI/UTI during

the last pregnancy in the both unadjusted and adjusted models at roughly equal increased odds (1.55 and 1.49, respectively).

Gender discriminatory attitudes showed significant relationships to increased odds of reporting an RTI/UTI in all three countries. In Bangladesh holding more tolerant opinions about instances of gender-based violence as well as gender-stereotypical domestic roles, as measured in separate scales, were significantly associated with increased odds of reporting RTI/UTI during the last pregnancy in adjusted models. In Ethiopia, gender-inequitable opinions about sexual relationships and believing that marrying girls young could resolve financial problems in the household were significantly associated with increased odds of reporting an RTI/UTI during the last pregnancy. In Mali, none of the gender scales showed significance to whether a woman reported an RTI/UTI during their last pregnancy in unadjusted models and were not included in adjusted models. However, women who believed that if a woman has sex before marriage, she is undeserving of respect had a statistically significant association to increased odds of reporting an RTI/UTI during their last pregnancy.

Having been visited by a health worker in the six months preceding the survey was only significantly associated with also reporting an RTI/UTI in the last pregnancy in Mali. It was not associated with a self-reported RTI/UTI in either Bangladesh or Ethiopia. In Mali, the odds of reporting an RTI/UTI during the last pregnancy increased more than two-fold among women who received at least one visit from a health worker in the six months preceding the interview. This is not to say that the health worker visits may be associated with the experience of an infection, but rather that these women may be more inclined to report the symptoms after having spoken about them to a health worker, for example.

Mass media exposure (TV or radio) at least once per week was only associated with self-reports of an RTI/UTI during the last pregnancy in adjusted models in Bangladesh and Ethiopia, but not in Mali. In Bangladesh the odds of reporting a RTI/UTI during the last pregnancy increased by 33% if women reported exposure to mass media at least once per week. In Ethiopia odds increased by more than two-fold (OR: 2.03). Again, this is not to say that mass media is somehow resulting in infections, but maybe that these women were exposed to something on the airwaves or some other undocumented variable that facilitated their willingness to report having experienced these symptoms.

In Bangladesh, several ‘miscellaneous’ variables showed significant associations to decreased odds of self-reporting an RTI/UTI during their last pregnancy, that were not included in the Ethiopia or Mali models due to a lack of contribution to model fit and explaining the data, yet these variables contributed to the strength of the Bangladesh models. Women surveyed in Bangladesh who knew where to obtain a method of family planning had 40% lower odds of reporting an RTI/UTI during their last pregnancy than women who did not know where to obtain a method. Women who use soap to wash their hands in Bangladesh had 50% lower odds of reporting an RTI/UTI during their last pregnancy than women who used either water alone or water and ash. We investigated other hygiene and hand-washing variables, but they did not contribute anything to the fit of the data in the models. Finally, increasing levels of concern for what others think of the women surveyed was significantly associated with nearly 50% lower odds of reporting an RTI/UTI during their last pregnancy. These women could be behaving in a way such that they are either proactively avoiding RTI/UTI infections, or they may be less likely to report to an interviewer that they are experiencing symptoms because of their concern what other people think of them, or there

could be an unexplained dimension not accounted for in our model that helps explain this relationship.

Malaria

Univariate characteristics

Far more respondents in Mali than in Ethiopia reported experience with malaria during their, or their partner's last pregnancy. Almost half of women and men in Mali reported experience with malaria during the last pregnancy. Accordingly, respondents in Mali reported owning more bed nets and higher frequency of sleeping under bed nets, both during the preceding night as well as during pregnancy. Owning and using bed nets was almost universal in Mali, according to self-reports. Similarly, more respondents in Mali than Ethiopia reported receiving both a bed net and IPTp during their last pregnancy.

Chapter Nine: Maternal nutrition

Chapter 9 describes key aspects of women's nutrition in general and during pregnancy. Women's nutritional status has important implications for a woman's lived experiences in general, as well as during pregnancy and for the health of her children. This chapter is organized into two sections: 1) women's nutrition; and 2) nutrition during pregnancy. Participants' responses in Bangladesh, Ethiopia, and Mali are described within each section.

Women's nutrition

Bangladesh

On average, women in Bangladesh reported eating 3.2 meals the previous day. Women's diets were moderately diverse (mean dietary diversity score: 4.3) and low in animal source foods (mean: 1.6). All women reported eating starchy staples such as cereals and white roots and tubers and about three-quarters (76.4%) said they ate meat or fish and other fruits and vegetables (not considered to be Vitamin A rich) the previous day. A little more than one-third ate dark green leafy vegetables (36.0%) and eggs (35.4%). Women were least likely to have consumed offal (4.2%) or dairy products (25.2%).

Ethiopia

On average, women in Ethiopia reported eating 2.8 meals the previous day[21]. Women's diets were not very diverse (mean dietary diversity score: 3.0) and most women (95.2%) did not consume any animal source foods in the previous day (mean: 0.1). Women's diets the previous day appeared to consist primarily of starchy staples (93.2%), legumes, nuts, and seeds (90.3%), and other fruits and vegetables not considered rich in Vitamin A (83.6%). Only one-fifth (19.5%) of women reported consuming dark leafy greens the previous day. Consumption of offal (0.6%), meat or fish (1.2%), eggs (2.0%), and dairy products (3.3%) was rare.

Mali

On average, women in Mali reported eating 2.8 meals the previous day. Women's diets were diverse (mean dietary diversity score: 6.0) and typically contained animal source foods (mean: 2.6). All women (99.2%) reported eating starchy staples and most consumed other fruits and vegetables not considered rich in Vitamin A (89.9%) and meat or fish (88.3%) the previous day. In addition, almost three-quarters (72.5%) of women said they ate Vitamin A rich fruits and vegetables the previous day. Women were least likely to have consumed eggs (35.1%) or offal (29.2%).

Eating patterns during pregnancy

Bangladesh

Women were asked to describe how their diets changed during pregnancy (as compared to before) and in the third trimester (as compared to earlier on in the pregnancy). About one-quarter of women said they ate more than usual (24.3%) or the same amount (25.2%) during pregnancy. Over one-third (35.3%) reported eating somewhat less and 15.2% said they ate much less than usual. During the third trimester, most women (42.7%) said they ate slightly

[21] Data collection in Ethiopia took place in March 2020, a period of fasting in the lead-up to Easter.

less than they had in previous trimesters. Around one-quarters said they ate the same amount (24.1%) or more (27.8%) than in previous trimesters. Few women reported eating much less (5.4%). About a quarter (23.8%) of women avoided eating certain foods during their pregnancy.

Food insecurity during the entire pregnancy was an issue for many women in Bangladesh. While 40.2% of women said they never lacked food, 32.8% lacked food between 2-60 days and 27.0% lacked food between 61-240 days (mean: 39.9 days).

Ethiopia

During pregnancy, most women reported eating somewhat less than usual (46.7%) or the same amount (37.3%). Few women said they ate much less (6.9%) or more than usual (9.1%). In the third trimester, women ate the same amount (47.6%) or slightly less (31.5%) than earlier in the pregnancy. Few (6.1%) women said they ate much less than and 14.9% ate more than in previous trimesters. About half (47.6%) of women said they avoided eating certain foods in pregnancy. Most women (87.3%) said they never lacked food during a typical month in pregnancy (mean: 1.5 days).

Religious fasting is an important part of Ethiopian Orthodox Christianity, with over 200 days dedicated to the abstention of animal source foods and restricted consumption of certain foods and water (Desalegn, Lambert, Riedel, Negese, & Biesalski, 2018). On average, women reported fasting 20.7 days during a typical month, 10.1 days during a typical month during pregnancy, and 11.1 days during the third trimester. Adherence to fasting varied considerably among women. For instance, in a typical month 11.7% of women never fasted, 43.4% fasted for 22 days, and 28.0% fasted the entire month. Women tended to cut back on the number of days they fasted during pregnancy. In a typical month during pregnancy, 38.5% said they never fasted, 5.0% fasted 22 days, and 14.7% fasted the entire month. In the third trimester, 40.1% did not fast and only 1 person fasted every day. Among women who fast in a typical month, most (69.9%) reported eating 1-2 meals. Among all women who fast at any point in time, 62.2% said they would continue to fast even if they felt unwell.

Mali

Nearly half (46.2%) of women in Mali said that they ate more than usual during their pregnancy. About one in five women said they ate either the same (17.7%) or somewhat less than usual (20.1%). Some 15.9% women said they ate much less than usual during pregnancy. The same pattern was observed for dietary changes made in the third trimester with half (50.2%) of women saying that they increased their food intake during the third trimester, about one-fifth eating the same amount (19.2%) or slightly less (18.8%), and about one-tenth (11.7%) eating much less. Two-thirds (65.0%) of women said they avoided eating certain foods during pregnancy and a little more than one-third (36.2%) reported having insufficient food to eat during a typical month in pregnancy.

Tables

Table 9.1. Women's nutrition among women across the three study settings.

		Women	
	Bangladesh N=927	Ethiopia N=855	Mali N=904
	n (%)	n (%)	n (%)
Ate at least 4 meals yesterday	168 (18.1)	109 (12.6)	153 (16.9)
Ate at least 3 meals yesterday	889 (95.9)	546 (63.9)	642 (71.0)
Mean number of meals eaten yesterday	3.2 (0.6)	2.8 (0.7)	2.8 (2.0)
Consumed the following foods yesterday			
Starchy staples: Cereals and white roots and tubers	927 (100.0)	797 (93.2)	897 (99.2)
Dark green leafy vegetables	334 (36.0)	167 (19.5)	592 (65.5)
Vitamin A rich fruits and vegetables	272 (29.3)	71 (8.3)	655 (72.5)
Other fruits and vegetables	672 (72.5)	715 (83.6)	813 (89.9)
Offal (organ meat)	39 (4.2)	5 (0.6)	264 (29.2)
Meat and fish	708 (76.4)	10 (1.2)	798 (88.3)
Eggs	328 (35.4)	17 (2.0)	317 (35.1)
Legumes, nuts, and seeds	253 (27.3)	772 (90.3)	519 (57.4)
Milk and milk products	234 (25.2)	28 (3.3)	537 (59.4)
Mean dietary diversity score (9 total)	4.3 (1.4)	3.0 (0.89)	6.0 (2.2)
Mean number of animal source foods consumed yesterday (5 total)	1.6 (1.0)	0.1 (0.3)	2.6 (1.6)

Table 9.2. Nutrition in pregnancy among women across the three study settings.

		Women	
	Bangladesh N=927	Ethiopia N=855	Mali N=904
	n (%)	n (%)	n (%)
Dietary changes during pregnancy compared to pre-pregnancy			
Ate much less than usual	141 (15.2)	59 (6.9)	144 (15.9)
Ate somewhat less than usual	327 (35.3)	399 (46.7)	182 (20.1)
Ate the same amount	234 (25.2)	319 (37.3)	160 (17.7)
Ate more than usual	225 (24.3)	78 (9.1)	418 (46.2)
Dietary changes during the third trimester compared to earlier on in the pregnancy			
Ate much less than previous trimesters	50 (5.4)	52 (6.1)	106 (11.7)
Ate somewhat less than previous trimesters	396 (42.7)	269 (31.5)	170 (18.8)
Ate the same amount	223 (24.1)	407 (47.6)	174 (19.2)
Ate more than previous trimesters	258 (27.8)	127 (14.9)	454 (50.2)
Avoided foods during pregnancy	221 (23.8)	407 (47.6)	584 (65.0)
Mean number of food insecure days during a typical month during pregnancy		1.5 (5.6)	
Mean number of food insecure days during the entire pregnancy	39.9 (47.4)		
Lacked food during a typical month in pregnancy			327 (36.2)
Mean number of days a month currently spent fasting		20.7 (9.1)	
Mean number of days a month spent fasting during last pregnancy		10.1 (10.8)	
Mean number of days spent fasting in third trimester		11.1 (12.6)	
Number of meals eaten when fasting among those who fast in a typical month (n=755)			
1-2 meals		528 (69.9)	
3-4 meals		227 (30.1)	
Continues to fast when unwell among those who fast at any point in time (n=442)		275 (62.2)	

Comparison across settings

Women in Bangladesh ate more meals per day as compared to women in Ethiopia and Mali. However, women's diets in Mali were much more diverse and were more likely to contain animal source foods. Across settings, women typically consumed starchy staples and fruits and vegetables not considered rich in Vitamin A and were not likely to have eaten offal, a nutrient-rich food. Women in Mali were more likely to eat more than usual during pregnancy and then again in the third trimester as compared to women in Bangladesh and Ethiopia. Women in Ethiopia and Mali were more likely to avoid eating certain foods during pregnancy than women in Bangladesh.

Multivariate model of maternal food consumption (reduced food consumption as compared to pre-pregnancy vs. did not)

Tables 9.3-9.5 show bivariate and multivariate associations with women's self-reported food consumption (reduced food consumption vs. did not) during their most recent pregnancy.

Bangladesh

In Bangladesh, wealth was positively associated with reducing food consumption during pregnancy as compared to pre-pregnancy (Table 9.3). Those from households from a high wealth tercile were, in adjusted models, 2.3 times more likely to report having consumed less during pregnancy than before (95% CI; 1.31-4.15; $p<0.01$). Having lacked food during pregnancy was also positively associated with more than 2.5 times the odds of having reduced food consumption during pregnancy (95% CI: 1.54-4.14; $p<0.001$). Bounded descriptive norms related to other women in the community who did not increase their food consumption during pregnancy significantly contributed to the final multivariate model. Those reporting medium social norms related to *not* increasing food consumption (as compared to this being infrequently reported) were significantly associated with increased odds of reducing food consumption during pregnancy (Table 9.3). Greater support of discriminatory gender norms related to both violence and sexual relationships were significantly associated with increased odds of consuming less food during pregnancy as compared to pre-pregnancy. Greater violence in the community was also positively associated with eating less during pregnancy than pre-pregnancy (AOR: 2.84; 95% CI:1.37-5.88; $p<0.01$). workload during pregnancy had an interesting association with food consumption. Those with greater workload, as compared to those with a smaller workload during pregnancy, had reduced odds of reducing their food consumption during pregnancy (AOR: 0.22; 95% CI:0.06-0.81; $p<0.05$). Women reporting greater couple-led decision-making were less likely to report reducing their food consumption during pregnancy (Table 9.3).

Ethiopia

Similar to the model fit for data from Bangladesh, household wealth had a positive association with reducing food consumption during pregnancy (Table 9.4). In comparison, educational attainment was protective against reducing food consumption during pregnancy (AOR for Secondary or higher vs. no formal education: 0.48; 95% CI: 0.29-0.79; $p<0.01$). Greater household vulnerability led to two times the odds of reporting a reduction in one's food consumption during pregnancy as compared to pre-pregnancy (95% CI: 1.42-2.81; $p<0.001$). Those with greater workload during pregnancy, as well as those whose workload did not change and those who worked in the third trimester, had significantly reduced odds of eating less during pregnancy as compared to pre-pregnancy (Table 9.4). Fasting was also

associated with reducing one's food intake during pregnancy (9.4). Women reporting higher couple communication about nutrition as well as being the primary decision-makers for cooking were less likely to report reducing their food consumption during pregnancy (Table 9.4). However, the reverse was true for those reportedly making decisions to buy vegetables (AOR: 1.79; 95% CI:1.25-2.58; $p<0.01$)

Mali

In Mali, women reporting that they lacked food during their recent pregnancy were significantly more likely to report having reduced their food consumption during pregnancy (AOR: 2.75; 95% CI: 2.06-3.69; $p<0.001$). While couple communication was protective against reducing food consumption during pregnancy, women reporting high levels of women-led decision-making had more than 2.5 times the odds of reporting that they reduced their food consumption during pregnancy as compared to those reporting low levels of women-led decision-making ($p<0.1$; Table 9.5). Greater household stress experienced by pregnant women in the community was positively associated with women's reported reductions in food consumption during pregnancy (Table 9.5).

Tables

Table 9.3. Determinants of women reducing food consumption during most recent pregnancy as compared to pre-pregnancy among women in Bangladesh.

(Bangladesh) Explanatory variables of interest	Unadjusted OR	Adjusted OR
Wealth tercile (Ref: low)		
Medium	1.70*	1.94**
	(1.10 - 2.62)	(1.18 - 3.21)
High	1.41	2.33**
	(0.86 - 2.30)	(1.31 - 4.15)
Lacked food during pregnancy (Ref: Low)		
Medium	0.69	1.04
	(0.44 - 1.09)	(0.62 - 1.74)
High	1.49^	2.52***
	(0.98 - 2.26)	(1.54 - 4.14)
Social norm: Women who do not increase food consumption during pregnancy (Ref: Low: 0-3)		
Medium (4-6)		
	2.21***	1.60*
	(1.48 - 3.29)	(1.00 - 2.54)
High (7-10)	1.09	0.61
	(0.63 - 1.89)	(0.32 - 1.16)
Discriminatory gender norms: Sexual relationships (Ref: Less support)	1.90*	1.25
Medium support	(1.10 - 3.29)	(0.67 - 2.32)
More support	4.72***	2.65**
	(2.86 - 7.81)	(1.46 - 4.82)
Discriminatory gender norms: violence ((Ref: Less support)	0.98	0.57^
Medium support	(0.59 - 1.64)	(0.32 - 1.01)
More support	2.74***	1.26
	(1.75 - 4.28)	(0.72 - 2.20)
Social norm: Women experiencing violence (Ref: Low: 0-3)		
Medium (4-6)	1.37	1.15
	(0.91 - 2.05)	(0.72 - 1.83)
High (7-10)	2.70**	2.84**
	(1.44 - 5.06)	(1.37 - 5.88)
Workload during pregnancy (Ref: Less than typical day pre-pregnancy)		
Same as typical day pre-pregnancy	1.72**	1.38
	(1.19 - 2.48)	(0.89 - 2.16)
More than typical day pre-pregnancy	0.36^	0.22*
	(0.11 - 1.19)	(0.06 - 0.81)
Help from someone in household during pregnancy vs. non	0.45***	0.59*
	(0.29 - 0.69)	(0.36 - 0.99)
Couple-led household decision-making (Ref: Low)		
Medium	0.33***	0.37***
	(0.19 - 0.57)	(0.20 - 0.66)
High	0.40^	0.40
	(0.14 - 1.14)	(0.13 - 1.20)
Watches TV at least once a week vs. doesn't	0.62**	0.54**
	(0.43 - 0.88)	(0.35 - 0.84)
Constant	--	0.11***
	--	(0.04 - 0.26)
Pseudo r^2: 0.1648	--	
Observations	--	927

95% confidence interval in parentheses
*** p<0.001, ** p<0.01, * p<0.05, ^ p<0.1

Table 9.4. Determinants of women reducing food consumption during most recent pregnancy as compared to pre-pregnancy among women in Ethiopia.

(Ethiopia) Explanatory variables of interest	Unadjusted OR	Adjusted OR
Educational attainment (Ref: No formal education)		
Primary	1.03	0.86
	(0.76 - 1.39)	(0.60 - 1.22)
Secondary or higher	0.68^	0.48**
	(0.45 - 1.01)	(0.29 - 0.79)
Household vulnerability (high vs. low)	1.37*	2.00***
	(1.04 - 1.81)	(1.42 - 2.81)
Wealth tercile (Ref: low)		1.46^
Medium	1.61**	
	(1.14 - 2.27)	(0.99 - 2.16)
High	2.28***	2.19***
	(1.59 - 2.99)	(1.46 - 3.28)
Social norm: Women who do not increase food consumption during pregnancy (Ref: Low: 0-3)		
Medium (4-6)	1.61**	1.50*
	(1.19 - 2.18)	(1.06 - 2.13)
High (7-10)	0.53**	0.68^
	(0.36 - 0.78)	(0.44 - 1.07)
Workload during pregnancy (Ref: Less than typical day pre-pregnancy)		
Same as typical day pre-pregnancy	0.43***	0.66*
	(0.32 - 0.57)	(0.47 - 0.93)
More than typical day pre-pregnancy	0.30***	0.36**
	(0.15 - 0.58)	(0.17 - 0.77)
Did not fast during third trimester vs. did	0.58***	0.65*
	(0.44 - 0.76)	(0.46 - 0.91)
Does not fast when unwell vs. does	2.13***	1.40^
	(1.57 - 2.89)	(0.97 - 2.01)
Discriminatory gender norms: Reproductive health (Ref: Less support)	1.51*	
Medium support	(1.06 - 2.16)	1.67* (1.10 - 2.54)
More support	0.84	0.97
	(0.62 - 1.15)	(0.65 - 1.44)
Discriminatory gender norms: Sexual relationships (Ref: Less support)	0.59**	0.67*
Medium support	(0.43 - 0.81)	(0.46 - 0.98)
More support	0.60**	0.56**
	(0.42 - 0.85)	(0.36 - 0.87)
Worked during third trimester vs. didn't	0.44***	0.52**
	(0.31 - 0.63)	(0.34 - 0.79)
Partner helped during pregnancy vs. didn't	1.89***	1.65**
	(1.43 - 2.49)	(1.19 - 2.27)
High communication about nutrition in past 6 months vs. low	0.51***	0.46***
	(0.39 - 0.67)	(0.33 - 0.64)
Woman alone decides about cooking (vs. doesn't)	0.60*	0.48**
	(0.38 - 0.95)	(0.28 - 0.84)
Woman alone decides about buying vegetables (vs. doesn't)	1.90***	1.79**
	(1.40 - 2.59)	(1.25 - 2.58)
Constant	--	2.66*
	--	(1.22 - 5.80)
Pseudo r^2: 0.1646	--	
Observations	--	855

95% confidence interval in parentheses
*** p<0.001, ** p<0.01, * p<0.05, ^ p<0.1

Table 9.5. Determinants of women reducing food consumption during most recent pregnancy as compared to pre-pregnancy among women in Mali.

(Mali) Explanatory variables of interest	Unadjusted OR	Adjusted OR
Lacked food during pregnancy (Yes vs. no)	2.98***	2.75***
	(2.25 - 3.97)	(2.06 - 3.69)
Couple communication on health topics in past 6 months (Ref: Low)		
Medium	0.88	0.79
	(0.62 - 1.25)	(0.54 - 1.15)
High	0.54**	0.52**
	(0.36 - 0.81)	(0.34 - 0.79)
Women-led household decision-making (Ref: Low)		
Medium	1.53*	1.47^
	(1.06 - 2.21)	(1.00 - 2.17)
High	2.48^	2.53^
	(0.91 - 6.74)	(0.89 - 7.19)
Social norm: Household stress among pregnant women (Ref: Low: 0-3)		
Medium (4-6)	1.36^	1.28
	(0.96 - 1.93)	(0.89 - 1.85)
High (7-10)	2.26***	1.90**
	(1.53 - 3.34)	(1.27 - 2.86)
Don't know	1.04	1.02
	(0.69 - 1.56)	(0.66 - 1.56)
Constant	--	0.39***
	--	(0.26 - 0.59)
Pseudo r^2: 0.0723	--	
Observations	--	904

95% confidence interval in parentheses
*** p<0.001, ** p<0.01, * p<0.05, ^ p<0.1

Chapter Ten: Family planning

This chapter explores several dimensions of family planning, including knowledge of contraceptive methods, contraceptive self-efficacy, couple communication about family planning, family planning-related social norms, current use or having ever used a contraceptive method, how long a method has been used and whether participants had ever discussed side effects of contraceptive methods with a service provider. We also explore determinants of whether a woman is currently using a family planning method through adjusted regression analyses.

Tables 10.1 and 10.2 describe the distribution of male and female participants in all three study settings. Results are described below by country setting. To evaluate contraceptive knowledge, data collectors asked whether participants knew of any contraceptive methods. If a woman spontaneously cited a method by name, it is counted as 'yes'. If, however, participants cited a method by name after having been described the method, it is counted as 'no'. Dichotomous variables reported in univariate and regression analyses were split at the median number of methods known in each country: 3 in Bangladesh; 6 in Ethiopia; 0 in Mali. To evaluate contraceptive self-efficacy, participants were asked how confident they were that they could perform a number of tasks: 1) to start a conversation about family planning with their spouse/partner; 2) to obtain a family planning method if they wanted one; 3) to use a family planning method even if their religious leader opposes it; 4) to use a family planning method even if relatives disapprove. Each of the four self-efficacy items were dichotomized at the middle of the scale. To evaluate contraceptive social norms, participants were asked to enumerate the number of couples in their neighborhood out of 10 that they think: 1) are currently using a family planning method to delay or space a birth; 2) have three or more children currently; 3) approve of using family planning to avoid an unwanted pregnancy. Responses were grouped from 0-5 and 6-10, and, if 'don't know' was an option they were excluded from tabulations. To evaluate current use of family planning, participants were asked whether they or their partner are currently using any method of family planning, reporting either 'yes' or 'no'. Similarly, ever-use was evaluated by asking participants who were not currently using a method whether they had ever used a method in their life, and if so, which method. Anyone who responded that they were currently using a method or had ever used a method were then asked to estimate when they adopted that method. To evaluate the frequency of couple communication, participants were asked how many times in the 12 months preceding the interview had they discussed family planning with their spouse/partner. For those who responded that they did speak about family planning with their spouse at least once, they were then asked to recall who typically initiated those conversations. Finally, participants who reported that they were currently using a contraceptive method at the time of the survey were asked to recall whether a service provider described the potential side-effects associated with their method of choice, and whether they were told how to manage those side-effects.

Bangladesh

Current use and ever use of any family planning method

Self-reported current use of any family planning method (Table 10.1) among women and men surveyed in Bangladesh was high (78.2% of women; 84.5% of men). Among women aged 15-24 years, 76.8% reported currently using a method. Among men aged 16-24, 80.8%

reported currently using a method. Roughly half of all women and all men who reported they were currently using a method at the time of the survey said that they or their partner was using the pill (58.2% of women; 59.6% of men). The next most common method was injectables (26.1% of women; 25.6% of men), followed by the male condom (7.5% of women; 10.2% of men). Only 2.9% of women and 1.8% of men reported that they were using a traditional method measured, either rhythm, withdrawal or another non-modern method. Ever-use of a family planning method was higher than current use; 90.3% of women and 87.6% of men reported that they had previously used a family planning method. Similar to current use, the method of choice was the pill (67.6% of women; 62.5% of men), followed by the injectable method (23.1% of women; 19.4% of men). More women than men who had ever used a contraceptive method reported that they adopted their method of choice more than two years ago (35.9% of women; 5.1% of men). By contrast, more men than women who ever used a contraceptive method reported that they adopted their method of choice in the 6 – 12 months preceding the survey (35.7% of men; 16.3% of women). Only 18.7% of women and 5.8% of men reported that they had adopted their method of choice within the 6-months preceding the interview.

Side-effects

Among surveyed women who were current users of a contraceptive method at the time of the survey in Bangladesh, 46.6% reported that the service provider described the potential side-effects associated with their family planning method of choice (Table 10.2). Slightly fewer women who were currently using a method (39.6%) of women surveyed reported that the service provider also described how to manage the side-effects.

Contraceptive knowledge

Knowledge of at least one contraceptive method was higher among women than men surveyed in Bangladesh (Table 10.2). Among women, 96% knew of at least one contraceptive method while 81.2% of men knew of at least one method. On average, women knew of 3.5 methods from among 11 modern methods and 2 traditional methods, and men knew of 2.8 methods. The most commonly cited contraceptive method among women was the pill (88% of women surveyed), followed by injectables (78.5%) and the male condom (66.2%). From among modern methods, fewest women knew of the female condom and standard days method (1.4% and 1.7%, respectively). Among men, 71.9% spontaneously cited the male condom and 71.0% spontaneously cited the pill, while at the lower end, only 0.6% of men cited lactational amenorrhea.

Contraceptive self-efficacy

Men and women reported similar levels of contraceptive self-efficacy (Table 10.2). On average, 65.4% of women surveyed in Bangladesh were ranked as having high self-efficacy across the four self-efficacy items, as were 67.8% of men. Women reported highest confidence in their ability to use a family planning method if either a religious leader or family relative disapproved of its use (81.9% and 81.1%, respectively). Three-out-of-four women reported that they felt they could obtain a family planning method if they wanted one (76.8%), and 69.5% felt they were able to start a conversation about family planning with their spouse/partner. Men reported rather consistent levels of high self-efficacy across the four items: 84.3% felt confident in starting a conversation with their spouse; 82.2% felt confident they could obtain a family planning method; 82.2% felt confident they could use a method if their religious leader opposed it; and 83.2% felt confident they could use a family planning method even if a relative disapproved.

Contraceptive social norms

On average, the perception that other couples in Bangladesh were currently using a family planning method was high among both women and men surveyed in Bangladesh (7.9 and 7.8 couples out of 10, respectively; Table 10.2). Both men and women felt similarly that 3.6 and 3.8 couples currently had three or more children. Perceived approval for using family planning was relatively high among both men and women. Women though on average 7.6 couples approved of using family planning to avoid unwanted pregnancies, while men thought an average of 6.0 couples approved of using family planning.

Couple communication

The number of men and women surveyed in Bangladesh who reported that they had spoken with their partner/spouse about family planning three or more times was remarkably high (68.0% of women; 83.9% of men; Table 10.2). Only 5.3% of women and 7.2% of men reported that they had never discussed family planning with their spouse/partner. Among those who had discussed family planning with their spouse at least once, women reported in higher frequency that it was them who initiated the conversation (69.3% of women; 20.7% of men), while men reported in higher frequency that it was both, themselves and their spouse/partner, that mutually initiated the conversation (16.9% of women; 24.6% of men). Thirteen percent of women said their spouse/partner usually initiated the conversation, while 54.5% of men said the same about their spouse/partner.

Ethiopia

Current use and ever use of any family planning method

More women than men surveyed in Ethiopia reported that they or their spouse/partner was currently using a family planning method at the time of the survey (52.4% of women; 45.8% of men; Table 10.1). Among the 52.4% of women who reported their current use of a contraceptive method, 80.6% were using the injectable, followed by lactational amenorrhea (7.7%), and implants (7.5%). Among the 45.8% of men who reported their current use of a contraceptive method, 86.9% also reported that they used the injectable with their spouse/partner, followed by the implant (7.6%) and the pill (3.0%). Only 0.2% of women and 1% of men reported using a traditional method, the rhythm method. Both women and men reported ever using a family planning method in equally high numbers (87.3% of women; 80.6% of men). Method identification of ever-use is the principal method cited by the respondent. The most frequently cited method by women who have ever used a contraceptive method was the injectable (82.8% of women who have ever used) followed by the implant (2.7% of women who have ever used). Men also cited the injectable most frequently (89.4% of men who have ever used) followed by the implant (6.9%). Ever-use of traditional methods was 0% for women who had ever used a method and 0.3% (one individual) among men who had ever used a method before. More than half of women (51.7%) and 39.1% of men reported that they adopted their method of choice, whether current or past, more than two years ago. Only 11.9% of women and 11.3% of men who were current or past users reported that they started using their method of choice within the 6 months preceding the interview.

Side-effects

Among 52.4% of women who reported they were currently using a contraceptive method, only 33.3% reported that a family planning service provider discussed the potential side-effects of their family planning method of choice (Table 10.2). Similarly, only 32.6% of

women who reported they were currently using a contraceptive method also reported that the service provider described to them how to manage the side-effects for their method of choice.

Contraceptive knowledge

Knowledge of at least one contraceptive method was higher among women surveyed in Ethiopia than men (97.3% of women; 81.3% of men; Table 10.2). On average, women knew of 4.1 methods from among 11 modern and 2 traditional methods, compared to 2.9 methods on average that men cited spontaneously. Women cited the injectable method most commonly used (94.4% of women) followed by implants (82.1% of women) and the pill (80.0% of women). Women who also cited traditional methods such as the rhythm method were relatively high (18.4% of women). The most commonly cited methods among men mirrored those of women, but in lower numbers. The most commonly known among men was the injectable (72.7% of men) followed by the implant (56.3%) and the pill (55.6%). Men also cited withdrawal in relatively high numbers (15.7%). The median number of methods known by either men or women was 6; only 43.9% of women cited 7 or more methods without prompting and only 34.7% of men cited 7 or more methods without prompting.

Contraceptive self-efficacy

Women who reported that they did not discuss family planning with their spouse/partner did not answer questions about self-efficacy in the Ethiopia survey (35.3% of total women; Table 10.2). These women are excluded from this analysis. Among the women who did respond to the questions (n = 546), average self-efficacy across the four items was low – 53.9% of women ranked as 'high contraceptive self-efficacy' and 46.2% of the women were 'low contraceptive self-efficacy'. For the individual self-efficacy items, only 41.2% of women reported high confidence to start a conversation about family planning with their spouse/partner. Women reported slightly higher confidence in their ability to obtain a family planning method (47.4% of women). Only 34.4% of women expressed high confidence in their ability to use a method even if their religious leader opposed its use. Only 47.4% of women were highly confident they could use a family planning method if a family relative disapproved. By contrast, men in Ethiopia reported higher contraceptive self-efficacy across the same four domains of contraceptive self-efficacy (84.0% of men scored 'high contraceptive self-efficacy'). For the individual items: 56.7% of men felt highly confident they could start a conversation with their partner/spouse about family planning; 75.9% of men felt highly confident in their ability to obtain a family planning method if they wanted one; 69.0% of men felt highly confident they could use a method even if their religious leader opposed its use; and 79.4% of men felt highly confident they could use a method even if a family relative disapproved.

Contraceptive social norms

On average, the perception that other couples in Ethiopia were currently using a family planning method was high among both women and men surveyed in Ethiopia (7.9 and 8.5 couples out of 10, respectively; Table 10.2). Women felt that 5.9 out of 10 couples currently have three children, while men thought 6.6 couples had three children. Perceived approval for using family planning was relatively equal among both men and women. Women thought on average 7.4 couples approved of using family planning to avoid unwanted pregnancies, while men thought an average of 7.2 couples approved of using family planning.

Couple communication

The number of women and men surveyed in Ethiopia who reported that they had spoken with their partner/spouse about family planning three or more times in the 12 months preceding the interview was relatively low (35.0% of women; 46.5% of men; Table 10.2). Roughly one third of women (36.1%) and 22.7% of men reported that they had never discussed family planning with their spouse/partner. Among those who had discussed family planning with their spouse at least once, both women and men reported in high frequency that it was the female partner/spouse who typically initiated the conversation (65.0% of women said they initiated the conversation; 54.5% of men said their female spouse/partner initiated the conversation). Roughly equal proportions of women and men who had discussed family planning with their partner/spouse reported that it was both members of the partnership who initiated the conversations together (22.5% of women reported 'both'; 24.6% of men reported 'both').

Mali

Current use and ever use of any family planning method

Current use of a contraceptive method was reportedly low in Mali (Table 10.1), by both women and men (26.7% of women; 42.3% of men). From among women who reported using a method at the time of the survey, 37.8% of women opted for the implant, followed by 36.9% for the injectable, and 17.0% for the pill. Similarly, 41.0% of men reported that they were using the injectable with their spouse/partner, followed by 33.9% for the implant, and 11.5% for the pill. Usage of other traditional methods was 2.9% for women and 9.8% for men. More women reported having ever used a method (39.8%) than those currently using a method. The injectable and implant were the two most cited methods (42.5% and 35.0%, respectively). Roughly equivalent numbers of men reported having ever used a method (44.8%) as current users. (N.B.: By design men in Mali were not asked the same follow-up questions about the specific method if they ever used a method, or when they adopted their method of choice; the data agencies in Bangladesh and Ethiopia opted to include these questions in their versions of the questionnaire.)The majority of women (54.2%) who had ever used a method reported that they adopted their method of choice more than two years ago. Almost one-in-five women (19.7%) reported that they adopted their method of choice less than 6 months preceding the interview.

Side-effects

Among surveyed women who were currently using a contraceptive method in Mali, 77.2% reported that a service provider discussed potential side-effects associated with their family planning method of choice (Table 10.2). Similarly, 73.4% of the women who were currently using a contraceptive method reported that the provider also described how to manage the side-effects associated with their method of choice.

Contraceptive knowledge

Knowledge of at least one contraceptive method among women and men surveyed in Mali was low (35.1% of women; 42.0% of men; Table 10.2). On average, women were able to spontaneously name 1.6 methods out of a list of 11 modern methods and 2 traditional methods, and men were able to name 1.9 methods from among the same list of 11 modern and 2 traditional methods. The female condom was most commonly cited method among women (17.4%) followed by the male condom (16.8%) and standard days (15.5%). Only 6.6% of women named the pill; 6.7% named the injectable. Among men, 19.1% named the

female condom, followed by the male condom and female sterilization (both 18.7%), and the IUD (17.8%). Women and men both cited the two traditional methods relatively highly, between 12.0% and 14.5%.

Contraceptive self-efficacy

Men who were interviewed in Mali generally expressed higher average contraceptive self-efficacy than women who were interviewed across the four contraceptive self-efficacy items (84.0% of men scored 'high' contraceptive self-efficacy; 71.1% of women scored 'high' contraceptive self-efficacy; Table 10.2). For the individual self-efficacy items: more men were highly confident they could start a conversation about family planning with their spouse/partner (84.2% of men; 73.8% of women). More men were highly confident they could obtain a method of family planning if they wanted one (82.2% of men; 67.6% of women). Women's confidence level dropped in relation to being able to use a contraceptive method in the face of opposition or disapproval from their social circle. More men were highly confident they could use a family planning method even if their religious leader opposed its use (75.3% of men; 59.1% of women). More men were highly confident they could use a family planning method if their family relative disapproved (77.1% of men; 59.5% of women).

Contraceptive social norms

Men and women in Mali were offered the opportunity to respond 'don't know' to the social norms questions and between 16% - 38% of women and men surveyed chose to exercise this option. We have excluded them in this analysis (Table 10.2). Among women and men who responded to the questions, on average, women and men agreed that 6.2 or 6.3 couples out of 10 were currently using a family planning method in their area. Out of 10 couples, women thought an average of 6.0 currently had three children, and men thought an average of 6.6 couples had three or more children. Men and women both thought fewer couples would approve of using family planning to avoid an unwanted pregnancy in their area; women reported 4.6 couples out of 10, and men reported 5.3 couples out of 10.

Couple communication

Almost half of the women surveyed in Mali reported that they had never discussed family planning with their spouse/partner (46.7%; Table 10.2). Slightly fewer men (41.8%) also reported that they never discussed family planning with their partner/spouse. Twenty-two percent of women reported that they discussed family planning with their spouse/partner three or more times, and 14.8% reported having only discussed family planning once. By contrast, 32.8% of men reported having discussed family planning with their spouse/partner three or more times, and 6.6% reported having done so once. Neither men nor women were asked who initiated this discussion (N.B.: this question was removed by the data collection agency when revising the questionnaire to reduce overall length and burden to participants).

Tables

Table 10.1. Participant distribution of current and ever use of a contraceptive method, as reported by women (15-49 years) and men (18-55 years) from Bangladesh, Ethiopia and Mali

	Women			Men		
Profile	**BD N= 927**	**ETHIOPIA N = 855**	**MALI N = 904**	**BD N = 466**	**ETHIOPIA N= 432**	**MALI N=455**
	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)
Current and ever contraceptive use						
Current use of any method	725 (78.2)	439 (52.4)	241 (26.7)	394 (84.5)	198 (45.8)	183 (42.3) [1]
Current use by method, among current users						
Female sterilization	10 (1.4)	1 (0.2)	4 (1.7)	4 (1.0)	1 (0.5)	3 (1.6)
Male sterilization	0 (0)	0 (0)	1 (0.4)	0 (0)	0 (0)	0 (0)
Pill	422 (58.2)	13 (3.0)	41 (17.0)	235 (59.6)	6 (3.0)	21 (11.5)
IUD	3 (0.4)	3 (0.7)	7 (2.9)	1 (0.3)	1 (0.5)	2 (1.1)
Injectables	189 (26.1)	354 (80.6)	89 (36.9)	101 (25.6)	172 (86.9)	75 (41.0)
Implants	18 (2.5)	33 (7.5)	91 (37.8)	6 (1.5)	15 (7.6)	62 (33.9)
Male condom	54 (7.5)	0 (0)	0 (0)	40 (10.2)	0 (0)	2 (1.1)
Female condom	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Emergency contraception	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Standard days method	7 (1.0)	0 (0)	1 (0.4)	0 (0)	1 (0.5)	0 (0)
Lactational amenorrhea (LAM)	1 (0.1)	34 (7.7)	0 (0)	0 (0)	0 (0)	0 (0)
Rhythm	11 (1.5)	1 (0.2)	0 (0)	3 (0.8)	2 (1.0)	5 (2.7)
Withdrawal	7 (1.0)	0 (0)	1 (0.4)	2 (0.5)	0 (0)	2 (1.1)
Other	3 (0.4)	0 (0)	6 (2.5)	2 (0.5)	0 (0)	11 (6.0)
Ever use of any method	837 (90.3)	747 (87.3)	360 (39.8)	408 (87.6)	348 (80.6)	204 (44.8)
Ever use by method						
Female sterilization	4 (0.5)	1 (0.1)	5 (1.4)	2 (0.5)	0 (0)	-
Male sterilization	1 (0.1)	0 (0)	0 (0)	0 (0)	0 (0)	-
Pill	566 (67.6)	10 (1.2)	57 (15.8)	255 (62.5)	10 (2.9)	-
IUD	2 (0.2)	1 (0.1)	10 (2.8)	2 (0.5)	0 (0)	-
Injectables	193 (23.1)	708 (82.8)	153 (42.5)	79 (19.4)	311 (89.4)	-
Implants	13 (1.6)	23 (2.7)	126 (35.0)	59 (14.5)	24 (6.9)	-
Male condom	38 (4.5)	0 (0.0)	0 (0)	0 (0)	1 (0.3)	-
Female condom	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	-
Emergency contraception	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	-
Standard days method	3 (0.4)	1 (0.1)	2 (0.6)	0 (0)	0 (0)	-
Lactational amenorrhea (LAM)	0 (0)	2 (0.2)	0 (0)	0 (0)	1 (0.3)	-
Rhythm	11 (1.3)	0 (0)	2 (0.6)	3 (0.7)	1 (0.3)	-
Withdrawal	5 (0.6)	(0)	0 (0)	2 (0.5)	0 (0)	-
Other	1 (0.1)	-	5 (0.1.4)	0 (0)	0 (0)	-
When was method adopted, if ever used						
< 6 months	173 (18.7)	100 (11.9)	71 (19.7)	27 (5.8)	49 (11.3)	-
6 months – 1 year	151 (16.3)	101 (12.0)	32 (8.9)	167 (35.7)	80 (18.5)	-
1 year – 2 years	76 (8.2)	110 (13.0)	43 (11.9)	78 (16.7)	58 (13.4)	-
2+ years	333 (35.9)	436 (51.7)	195 (54.2)	24 (5.1)	169 (39.1)	-
Don't remember	104 (11.2)	97 (11.5)	19 (5.3)	125 (26.7)	76 (17.6)	-
Side effects (current users only)						
Provider described side effects of FP method						
Yes	338 (46.6)	146 (33.3)	186 (77.2)	-	-	-
No	387 (53.4)	293 (66.7)	55 (22.8)	-	-	-
Provider described how to manage side effects of FP method						
Yes	287 (39.6)	143 (32.6)	177 (73.4)	-	-	-
No	438 (60.4)	296 (67.4)	64 (26.6)	-	-	-
[1] n=22 missing						

Table 10.2. Participant distribution of knowledge, self-efficacy, couple communication, and social norms related to family planning, as reported by women (15-49 years) and men (18-55 years) from Bangladesh, Ethiopia and Mali

	Women			Men		
Profile	**BD N= 927**	**ETHIOPIA N = 855**	**MALI N = 904**	**BD N = 466**	**ETHIOPIA N= 432**	**MALI N=455**
	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)
Knowledge of contraceptive methods (spontaneous responses only)						
Mean number of methods known by respondents (SD)	3.5 (1.9)	4.1 (2.4)	1.6 (2.7)	2.8 (2.0)	2.9 (2.6)	1.9 (2.7)
Mean number of modern methods known by respondents (SD)	3.4 (1.9)	3.9 (2.1)	1.3 (2.3)	2.8 (1.9)	2.7 (2.3)	1.7 (2.3)
Knowledge of contraceptive methods (median split)						
Low	439 (47.4)	480 (56.1)	587 (64.9)	313 (67.2)	282 (65.7)	264 (58.0)
High	488 (52.6)	375 (43.9)	317 (35.1)	153 (32.8)	150 (34.7)	191 (42.0)
Any modern methods						
Female sterilization	202 (21.8)	149 (17.4)	128 (14.2)	117 (25.1)	25 (5.8)	85 (18.7)
Male sterilization	161 (17.4)	44 (5.2)	105 (11.6)	127 (27.3)	19 (4.4)	49 (10.8)
Pill	816 (88.0)	684 (80.0)	60 (6.6)	331 (71.0)	240 (55.6)	70 (15.4)
IUD	170 (18.3)	275 (32.2)	97 (10.7)	24 (5.2)	48 (11.1)	81 (17.8)
Injectables	728 (78.5)	804 (94.4)	62 (6.7)	245 (52.6)	314 (72.7)	50 (11.0)
Implants	338 (36.5)	702 (82.1)	80 (8.9)	36 (7.7)	243 (56.3)	66 (14.5)
Male condom	614 (66.2)	281 (32.9)	152 (16.8)	335 (71.9)	139 (32.2)	85 (18.7)
Female condom	13 (1.4)	95 (11.1)	157 (17.4)	7 (1.5)	61 (14.1)	87 (19.1)
Emergency contraception	75 (8.1)	64 (7.5)	81 (9.0)	60 (12.9)	18 (4.2)	47 (10.3)
Standard days method	16 (1.7)	51 (6.0)	140 (15.5)	7 (1.5)	39 (9.0)	74 (16.3)
Lactational amenorrhea (LAM)	14 (1.5)	147 (17.2)	148 (16.4)	3 (0.6)	18 (4.2)	71 (15.6)
Any traditional method						
Rhythm	30 (3.2)	157 (18.4)	114 (12.6)	12 (2.6)	68 (15.7)	55 (12.1)
Withdrawal	58 (6.3)	70 (8.2)	108 (12.0)	13 (2.8)	25 (5.8)	66 (14.5)
Other	52 (5.6)	-	16 (1.8)	17 (3.7)	3 (0.69)	-
Contraceptive Self-efficacy						
Overall score						
High	559 (65.4)	294 (53.9) [1]	643 (71.1)	255 (67.8) [2]	382 (84.0)	382 (84.0)
Low	296 (34.6)	252 (46.2)	261 (28.9)	121 (32.2)	73 (16.0)	73 (16.0)
Start a conversation about FP						
High	644 (69.5)	225 (41.2)	667 (73.8)	317 (84.3)	245 (56.7)	383 (84.2)
Low	283 (30.5)	321 (58.8)	237 (26.2)	59 (15.7)	187 (43.3)	72 (15.8)
Obtain a method of FP						
High	712 (76.8)	259 (47.4)	611 (67.6)	309 (82.2)	328 (75.9)	374 (82.2)
Low	215 (23.3)	287 (52.6)	293 (32.4)	67 (17.8)	104 (24.1)	81 (17.8)
Use a method if religious leader disapproves						
High	759 (81.9)	188 (34.4)	534 (59.1)	309 (82.2)	298 (69.0)	341 (75.3)
Low	168 (18.1)	358 (65.6)	370 (40.9)	67 (17.8)	134 (31.0)	112 (24.7)
Use a method of relatives disapprove						
High	752 (81.1)	259 (47.4)	538 (59.5)	313 (83.2)	343 (79.4)	351 (77.1)
Low	175 (18.9)	287 (52.6)	366 (40.5)	63 (16.8)	89 (20.6)	104 (22.9)
Contraceptive social norms						
Out of 10 couples, how many do you think are currently using a modern contraceptive method?						
mean (SD)	7.9 (2.3)	7.9 (2.3)	6.2 (2.3) [3]	7.8 (2.5) [4]	8.5 (1.9)	6.3 (2.2) [5]
0 - 5	122 (13.2)	170 (19.9)	261 (39.3)	68 (16.8)	46 (10.7)	105 (37.2)
6-10	805 (86.8)	685 (80.1)	403 (60.7)	338 (83.3)	386 (89.4)	177 (62.8)
Out of 10 couples, how many do you think have three or more children?						
mean (SD)	3.8 (2.2)	5.9 (1.8)	6.0 (2.2) [6]	3.6 (1.9)	6.6 (1.9)	6.6 (2.2) [7]
0 - 5	712 (76.8)	377 (44.1)	307 (41.4)	344 (84.7)	102 (23.6)	118 (30.9)
6-10	215 (23.2)	478 (55.9)	435 (58.6)	62 (15.3)	330 (76.4)	264 (69.1)
Out of 10 couples, how many do you think approve						

	Women			Men		
Profile	**BD N= 927**	**ETHIOPIA N = 855**	**MALI N = 904**	**BD N = 466**	**ETHIOPIA N= 432**	**MALI N=455**
	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)
of using FP to avoid an unwanted pregnancy?						
mean (SD)	7.6 (2.5)	7.4 (2.7)	4.6 (2.9) [8]	6.0 (2.8)	7.2 (2.9)	5.3 (3.0) [9]
0 - 5	181 (19.5)	247 (28.9)	437 (64.7)	177 (43.6)	129 (29.9)	167 (53.2)
6-10	746 (80.5)	608 (71.1)	238 (35.3)	229 (56.4)	303 (70.1)	147 (46.8)
Couple communication						
How many times have you discussed FP with your partner?						
Never	49 (5.3)	309 (36.1) [10]	419 (46.7)	29 (7.2) [11]	98 (22.7)	190 (41.8)
Once	83 (9.0)	84 (9.8)	133 (14.8)	0 (0)	29 (6.7)	30 (6.6)
Twice	165 (17.8)	163 (19.1)	147 (16.4)	36 (8.9)	104 (24.1)	86 (18.9)
Three or more times	630 (68.0)	299 (35.0)	199 (22.2)	340 (83.9)	201 (46.5)	149 (32.8)
Who initiated the conversations?						
Respondent	608 (69.3)	355 (65.0)	-	119 (31.7)	69 (20.7)	-
Spouse/partner	122 (13.9)	68 (12.5)	-	90 (23.9)	182 (54.5)	-
Both	148 (16.9)	123 (22.5)	-	167 (44.4)	82 (24.6)	-
Other	0 (0)	0 (0)	-	0 (0)	1 (0.3)	-

Notes:
[1] n=309 missing
[2] n=90 missing
3 240 people (26.6 total) said "Don't know" – they are excluded
[4] n=60 missing
[5] n=173 people (38.0 of total) said "Don't know" – they are excluded
[6] n=162 missing (17.9)
[7] n=73 missing (16.0 total)
[8] n=229 missing (25.3)
[9] n=141 missing (31.0)
[10] n=6 missing
[11] n=61 missing

Multivariate models

Current use of any contraceptive method

Bangladesh

Among women surveyed in Bangladesh, neither age, knowledge of contraceptive methods, receiving information about FP from any number of sources, nor having received a home-visit from a health worker were associated with whether women currently used a contraceptive method in adjusted regression analyses (Table 10.3). Women who live with their spouse or partner, as compared to women whose spouse or partner lives elsewhere, have 2.82 higher odds of currently using a contraceptive method (OR: 2.82; 95% CI: 1.66-4.78; p<0.001). Women of higher wealth status have decreased odds of using a contraceptive method as compared to women of lower economic status (OR: 0.87; 95% CI: 0.79-0.95; p<0.01). Women who discussed family planning with their spouse or partner at least once had up to 5.41-times higher odds of being a current contraceptive user, as compared to women who never discussed family planning with their partner (OR: 3.77, 2.33, 5.41; 95% CI: 1.62-8.75, 1.14-4.47, 2.79-10.50; p<0.01, p<0.05, p<0.001). Women's belief that couples approve of using family planning was significant in adjusted models, but women's belief that couples might be using family planning was not. When asked about how many couples out of 10 approve of family planning, women who thought that 4-6 couples approve had 2.34-times higher odds of being a current user as compared to women who thought fewer couples would approve of family planning (OR: 2.34; 95% CI: 1.12-4.89; p<0.05). However, a similar question asking how many couples out of 10 use family planning was not associated with current use status. Increasing reported contraceptive self-efficacy was associated with

increasing odds of currently using a contraceptive method (OR: 1.80, 2.16; 95% CI: 1.15-2.81, 1.41-3.30; p<0.01, p<0.001).

Ethiopia

Among women surveyed in Ethiopia, knowledge of contraceptive methods, knowing where to obtain a method, or having received a home-visit by a health worker were not associated with whether a woman was currently using a family planning method in adjusted regression models (Table 10.4). For every year increase of age, women have 5% decreased odds of being a current contraceptive user (OR: 0.95; 95% CI: 0.93-0.98; p<0.001). Thus, younger women have statistically significant higher odds of being a current user. Women of increasing household wealth status are also associated with increased odds of currently using a contraceptive method as compared to women of the lowest wealth quintile, with the highest wealth quintile showing 135% increased odds (OR: 2.35; 95% CI: 1.42-3.89; p<0.001). Women who currently live with their spouse or partner have increased odds of currently using a contraceptive method, as compared to women whose partner lives elsewhere (OR: 2.29; 95% CI: 1.08-4.86; p<0.05). Women who expressed less equitable opinions toward a suite of statements relating to reproductive health had 10% decreased odds of currently using a contraceptive method (OR: 0.90; 95% CI: 0.85-0.94; p<0.001). In unadjusted regression analyses, having received information about family planning from either one, two, or three or more sources were all significantly associated with increased odds of current use of a contraceptive method, but only the relationship between one source of information, as compared to no sources of information, remained significantly associated with current use in the adjusted model (OR: 1.90; 95% CI: 1.17-3.09; p<0.01). Women who discussed family planning with their spouse or partner at least once had 3.73-times increased odds of being a current contraceptive user as compared to women who never discussed family planning with their partner or spouse (OR: 3.73; 95% CI: 2.11-6.62; p<0.001). Similarly, women who discussed twice or three or more times also have increased odds of currently using a method, but not as much as women who discussed at least once (OR: 2.05, 2.31; 95% CI: 1.32-3.19, 1.59-3.35; p<0.01, p<0.01).

Mali

Among women surveyed in Mali, neither knowledge of contraceptive methods, exposure to mass media, the use of social media, nor health worker home-visits were associated with current contraceptive use (Table 10.5). The only age group that was statistically significant in adjusted regression models was for women ages 30-34 years. Women between 30-34 years had 77% increased odds of currently using a contraceptive method as compared to the reference group, 15-24 years (OR: 1.77; 95% CI: 1.06-2.96; p<0.05). Women of increasing wealth status are also associated with increased odds of currently using a contraceptive method, with women of the highest wealth tercile having over two-fold increased odds as compared to women of the lowest wealth textile (OR: 1.64, 2.38; 95% CI: 1.01-2.64, 1.47-3.87; p<0.05, p<0.001). Knowing where to obtain a contraceptive method is associated with increased odds of being a current user as compared to women who did not know where to obtain a contraceptive method (OR: 2.92; 95% CI: 1.16-7.35; p<0.05). Women who had received information about family planning from at least one source had higher odds of being a current user in unadjusted models, as compared to not having received information, but in adjusted models the relationship only held for women who received information from one source, but not more (OR: 1.77; 95% CI: 1.03-3.03; p<0.05). Women who discussed family planning with their spouse or partner at least once had increased odds of being a current contraceptive user as compared to women who had never discussed family planning with their spouse or partner. In particular, women who discussed three or more times had 4.66-

times increased odds (OR: 2.76, 2.93, 4.66; 95% CI: 1.57-4.85, 1.70-5.05, 2.80-7.74; p<0.001, p<0.001, p<0.001). Women who reported higher contraceptive self-efficacy had 35% increased odds of being a current contraceptive user as compared to women with lower reported contraceptive self-efficacy (OR: 1.35; 95% CI: 1.26-1.45; p<0.001).

Comparisons across country settings

Univariate characteristics

Contraceptive knowledge

Across the three study settings for both women and men, people interviewed in Ethiopia on average were able to spontaneously cite more contraceptive methods by name without prompting, followed by Bangladesh, then Mali. Women and men in Ethiopia were able to cite twice as many methods, on average, than women and men in Mali. In both Bangladesh and Ethiopia, women could spontaneously name more methods than men, but in Mali men knew, on average, slightly more methods than women. The median split of methods spontaneously cited by survey respondents varied by country. For example, the median for women in Bangladesh was 3 methods; the median for women in Ethiopia was 6 methods; and the median in Mali was 0 methods. In Bangladesh and Ethiopia, the pill and the injectable were cited spontaneously in very high proportions among women (88.0% of women in Bangladesh cited the pill; 78.5% cited the injectable; 80.0% of women in Ethiopia cite the pill; 94.4% cited the injectable). By contrast, only 6.6% and 6.7% of women in Mali were able to spontaneously cite the pill and injectable, respectively. There was not a single method in Mali that 20% of respondents could name spontaneously. The highest proportion of respondents who cited traditional methods alongside modern methods were women and men in Mali (up to 14.5%) and Ethiopia (up to 18.4%).

Contraceptive self-efficacy

In all three settings, higher proportions of men generally expressed higher contraceptive self-efficacy than their female counterparts. A lower proportion of women in Ethiopia compared to women in both Bangladesh and Mali, on average, expressed lower contraceptive self-efficacy when looking globally across the four self-efficacy elements, described in more detail below. By contrast, men in Bangladesh expressed lower contraceptive self-efficacy than men in either Ethiopia or Mali when looking at the four-item efficacy average. The differences between gender and setting become more apparent when looking at the individual statements respondents were asked. Women in Bangladesh expressed higher confidence than did women in Ethiopia and Mali in their ability to adopt or use a contraceptive method if faced with opposition from their religious leader or family members, whereas women in Ethiopia and Mali expressed higher confidence in their ability to either start a discussion about family planning with their spouse or to obtain a method. It appears as though social pressure weighs more heavily on female respondents in Ethiopia and Mali than in Bangladesh. While overall self-efficacy for all of the four items in the scale are higher among men, a similar relationship exists among men: men in Ethiopia and Mali expressed lower confidence in their ability to use a method if a family relative or religious leader opposes or disapproves of its use than they do for starting a conversation with their partner about family planning or obtaining a method if they wanted one. Men in Bangladesh expressed consistently high self-efficacy across the four items (between 82.2% - 84.3% for each item).

Contraceptive social norms

More than half of respondents in all three countries thought a majority of couples (between 6 and 10 couples out of 10) may be using family planning, but on average women and men in Mali enumerated fewer couples out of ten than in Bangladesh and Ethiopia. When asked about how many couples out of 10 would approve of family planning, Mali was unique in that they thought the minority of couples in their area would approve of using family planning (average of 4.6 couples for women; average of 5.3 couples for men), as compared to women and men in Bangladesh and Ethiopia, who thought between 6.0 – 7.6 couples would approve of family planning. By contrast, women and men in Mali reported a higher average of couples have three or more children, than did men and women in Bangladesh and Ethiopia. Responses in Mali averaged 6 couples out of 10 had three children, whereas women and men in Bangladesh reported roughly 3 out of 10 couples, and women and men in Ethiopia reported about 5.5 couples out of 10. All of this suggests that family planning is perceived to be lower and less approved of in Mali, and higher parity is perceived to be more common.

Couple communication about family planning

In all three countries, the majority of women and men reported having spoken to their spouse or partner at least once in the twelve months preceding the survey. However, some differences exist between countries. In Bangladesh, the vast majority of women and men (68.0% and 83.9%, respectively) reported that they discussed family planning with their partner or spouse three or more times in the year preceding the survey, and fewer than 10% of reported never having spoken about family planning with their spouse or partner. In Ethiopia, roughly equal proportions of women reported having never discussed family planning as having discussed three or more times (36.1% and 35.0%, respectively). As for men in Ethiopia, 46.5% reported having discussed family planning with their spouse or partner three or more times, while only 22.7% reported never having discussed family planning with their spouse in the twelve months preceding the survey. In Mali, almost half (46.7%) of women said they never discussed family planning with their spouse or partner, while 41.8% of men said the same. About one-in-five women in Mali (22.2%) and 32.8% of men reported having discussed family planning with their spouse or partner three or more times in the twelve months preceding the survey. While the majority of people in Mali discussed family planning at least once with their spouse or partner, almost half said they never have, while in Bangladesh less than 10% of men and women surveyed reported never having discussed it in the twelve months preceding the survey. It appears as though men and women in Bangladesh may more easily discuss family planning with their partner, which is not reflected in the reports of self-efficacy discussed above in comparison to, for example, Mali, where reported self-efficacy to initiate a conversation with one's spouse was equal or higher.

Current use of contraception and ever use

Current use of a contraceptive method was highest in Bangladesh, where roughly four out of five men and women reported that they or their partner are currently using a family planning method (78.2% of women; 84.5% of men). In Ethiopia, roughly half of women and men surveyed reported that they or their partner were currently using a contraceptive method (52.4% of women; 45.8% of men). The lowest proportion of respondents who reported using a contraceptive method were in Mali, where only 26.7% of women said they were using a method at the time of the survey, and 42.3% of men reported that they or their partner were using a method. In all cases, the pill and injectable were the most commonly cited methods, according to both women and men in all three countries. For example, 58.2% of women and 59.6% of men in Bangladesh reported they or their partner was using the pill; in Ethiopia,

80.6% of women and 86.9% of men reported they or their partner was using the injectable; and in Mali, 36.9% of women and 41.0% of men reported they or their partner was using the injectable. Only in Mali did a high proportion of women and men (37.8% and 33.9%, respectively) report they or their partner was using the implant, while roughly 2% of women and men in Bangladesh, and about 7.5% of women and men in Ethiopia said the same. In all settings, less than 2% of women or men reported using either the rhythm or withdrawal method. However, 2.5% of women and 6.0% of men in Mali said they were using 'other' methods that were neither modern, nor rhythm or withdrawal.

Among women and men surveyed who reported they were currently using a contraceptive method at the time of the survey, the highest proportion reported adopting their method of choice more than two years ago, except for men in Bangladesh. Only 5.1% of men in Bangladesh said they adopted their method of choice 2 or more years ago, as compared to between 35.9% - 54.2% of women and men in Ethiopia and Mali. Instead, the majority of men in Bangladesh reported adopting their method of choice between 6 months and one year ago. Roughly one-in-five women in Bangladesh and Mali reported that they adopted their method in the 6 months prior to the survey. Fewer women and men in Ethiopia (11.9% and 11.3%, respectively) reported that they adopted their method of choice in the 6 months preceding the survey.

The proportion of men and women in Bangladesh and Ethiopia who had ever used a method was more than twice as high as men and women in Mali. In Ethiopia, 90.3% of women and 87.6% of men reported having ever used a contraceptive method. In Bangladesh, 87.3% of women and 80.6% of men reported having ever used a contraceptive method. While in Mali, only 39.8% of women and 44.8% of men reported having ever used a method. Method choice in relation to ever use mirrors that of current use in all three countries. The pill, injectables, and implant show the highest proportion of use in all three settings. Traditional methods were cited in all three countries but only for 1.3% of people or fewer people.

Side-effects

Among female current contraceptive users in the three settings, women in Mali reported having discussed anticipated side-effects associated with their method of choice with a family planning provider in proportions roughly twice as high as women in either Bangladesh or Ethiopia. For example, 77.2% and 73.4% of women in Mali, respectively, discussed side effects and how to manage them with a provider, whereas 46.6% or fewer of women in Bangladesh and Ethiopia said the same, with as few as 32.6% of women reporting they discussed how to manage the side effects with their provider. This suggests that service provision in Mali may include consultations about side effects, whereas these conversations may not be taking place in Bangladesh or Ethiopia among the women surveyed. However, fewer overall women reported being a current user in Mali than in Ethiopia, so the sample is smaller, increasing the potential that more women among our survey sample could have discussed these topics with a provider as compared to the larger sample of women in Ethiopia and Bangladesh who reported they were currently using a method.

Regression analyses

The variables included in the regression models differ by country based on their bivariate significance to the outcome of interest – whether an individual is a current contraceptive user or not, of any contraceptive method (dichotomized in analyses as 'no' or 'yes'). We included standard socio-demographic variables unless they demonstrated in collinearity (e.g., parity and age were sometimes collinear) or they reduced the goodness of fit to such a degree that

their contribution to the model worsened the ability of the model to explain the data. On some occasions, a variable may not have been significant, but it contributed to the overall fit of the model and the ability of the model to explain the variance in the data. Nevertheless, several variables were consistent across models.

Age was significantly associated with current contraceptive use in Ethiopia and among one age group in Mali, but not with any age in Bangladesh. In Mali, women aged 30-34 had increased odds of being a current contraceptive user as compared to women aged 15-24. In Ethiopia, the significant relationship ($p<0.001$) demonstrated 5% decreased odds of being a current contraceptive user with each year of age above 18.

Level of wealth/socio-economic status was significantly associated with increased odds of being a contraceptive user in Ethiopia and Mali, but not in Bangladesh. In the highest wealth quintile in Ethiopia, women had 2.35 times higher odds than women in the lowest wealth quintile. Similarly, women in the highest wealth tercile in Mali had 2.38-times higher odds of being a current contraceptive user than women in the lowest tercile. However, as socio-economic status increased in Bangladesh, women actually had lower odds of being a current contraceptive user (OR: 0.87).

Whether respondents currently lived with their spouse in Bangladesh and Ethiopia, as compared to respondents whose spouses lived elsewhere at the time of the survey, had significantly increased odds of being a current contraceptive user at the time of the survey (up to 2.82-times increased odds). This variable was not included in the Mali survey as it did not contribute to the model and was not significant in bivariate analyses.

Interestingly, knowledge of more or fewer contraceptive methods was not significantly associated with being a current contraceptive user in any of the three countries in either unadjusted or adjusted models.

Having received information about family planning from one or more sources (e.g. not mass media, but from a family member, a friend, a service provider, etc.) was significantly associated with increased odds of being a current contraceptive user in both Ethiopia and Mali, but not in Bangladesh. In Ethiopia, the odds increased nearly two-fold (OR: 1.90), and in Mali, the odds increased 1.77-times.

The frequency with which women reported having spoken about family planning with their spouse over the 12-months preceding the survey was significantly associated with increased odds of being a current contraceptive user in all three settings, as compared to women who never discussed family planning with their partner or spouse in the preceding twelve months. In Bangladesh, having discussed family planning even once in the preceding twelve months increased the odds of being a current contraceptive user 3.77-times, and this increased to 5.41-times if having discussed three or more times. Mali follows a similar trend: women who discussed at least once had 2.76-times increased odds of being a current user, and women who discussed three or more times had 4.66-times increased odds of being a current contraceptive user. However, in Ethiopia, women who discussed family planning with their partner in the twelve preceding months also had significantly increased odds of being a current contraceptive user, but the increase became smaller with higher frequency of discussions (e.g., discussing once was associated with 3.73-times increased odds but discussing three or more times is associated with 2.31-times increased odds, as compared to women who never discussed with their partner in the twelve preceding months).

Knowing where to obtain a contraceptive method was not significantly associated with being a current contraceptive user in Ethiopia in either unadjusted or adjusted models, but it was significantly associated with increased odds (OR: 2.92) in adjusted models in Mali. This variable was not included in the Bangladesh model.

Higher contraceptive self-efficacy was significantly associated with increased odds of being a current contraceptive user, as compared to women who reported lower contraceptive self-efficacy. Women in Bangladesh who reported high contraceptive self-efficacy (i.e., an index of all four efficacy statements) had 2.16-times higher odds of being a current contraceptive user than women who scored low self-efficacy. In Mali, women who scored higher on the contraceptive self-efficacy had 1.35-times increased odds as compared to women who scored low contraceptive self-efficacy ($p<0.001$).

Perceived approval of family planning (a descriptive norm) was significantly associated with whether a woman was a current contraceptive user in Bangladesh. Women in Bangladesh who thought more couples out of 10 would approve of using family planning, as compared to women who thought fewer couples approved of it, had 2.34-times increased odds of being a current contraceptive user. Women in Ethiopia implied that they were confident in their ability to adopt a method if they believed relatives and religious leaders would support the use of family planning; however, in the adjusted regression models, contraceptive self-efficacy was not meaningfully associated with self-reported current use. The interplay between bounded descriptive norms related to FP and individuals' self-efficacy related to using FP is an interesting area for further exploration.

In Ethiopia, women who were more supportive of discriminatory gender norms related to reproductive health had significantly decreased odds (OR: 0.90; $p<0.001$) of being a current contraceptive user than women who had more equitable attitudes toward reproductive health. Other measures of discriminatory gender norms did not improve the models for Bangladesh or Mali and therefore were not included in the models.

Having received a home visit by a health worker in the six months preceding the survey bore no relationship to whether women surveyed in either of the three countries was a current contraceptive user in adjusted models. We performed chi-squared tests of independence to explore associations between health worker visits by age group of women in each of the three settings. In Bangladesh there was no association; in Ethiopia, only women aged 35-49 had a significant association to current use of family planning; in Mali, only women aged 15-24 had a significant association to current use of family planning. Nevertheless, when holding all other variables equal in adjusted models, a health worker visit in the 12 months preceding the survey was not a significant determinant of current contraceptive use.

In Mali, mass media exposure and use of social media appeared to contribute to the strength of our models, yet neither demonstrated a significant relationship to whether women were current contraceptive users. The variables were not included in the Bangladesh or Ethiopia models.

Tables

Table 10.3. Determinants of any current contraceptive use among women in Bangladesh.

(Bangladesh) Explanatory variables of interest	Unadjusted OR	Adjusted OR
Age (Range: 15-45)	1.01	1.01
	(0.98 – 1.05)	(0.98 - 1.05)
Respondent lives with spouse (Ref: No)		
Yes	2.95***	2.82***
	(1.83 – 4.77)	(1.66 - 4.78)
Wealth Index Score	0.94	0.87**
	(0.86 – 1.03)	(0.79 - 0.95)
Contraceptive method knowledge (Ref: 0-3 methods)		
4 or more methods	1.02	1.25
	(0.74 – 1.38)	(0.87 - 1.79)
Sources of FP information (Ref: None)		
1 source	0.62^	0.62
	(0.37 – 1.03)	(0.35 - 1.11)
2 sources	0.99	1.07
	(0.57 – 1.74)	(0.56 - 2.05)
3 or more sources	0.67	0.57^
	(0.41 – 1.10)	(0.32 - 1.02)
Frequency of couple FP communication (Ref: Never)		
Once	4.13***	3.77**
	(1.93 – 8.85)	(1.62 - 8.75)
Twice	2.52**	2.33*
	(1.32 – 4.83)	(1.14 - 4.74)
Three or more	6.35***	5.41***
	(3.48 – 11.59)	(2.79 - 10.50)
Out of 10 couples, how many are thought to use FP (Ref: 0-3)		
4-6	2.91**	1.47
	(1.47 – 5.77)	(0.66 - 3.25)
7-10	3.37***	1.46
	(1.86 – 6.12)	(0.71 - 3.02)
Out of 10 couples, how many are thought to approve of using FP (Ref: 0-3)		
4-6	3.46***	2.34*
	(1.85 – 6.48)	(1.12 - 4.89)
7-10	2.94***	1.61
	(1.72 – 5.03)	(0.83 - 3.12)
Contraceptive self-efficacy score (Ref: Low)		
Medium	2.13***	1.80**
	(1.43 – 3.18)	(1.15 - 2.81)
High	2.72***	2.16***
	(1.87 – 3.94)	(1.41 - 3.30)
Health worker home-visits in past 6 months (Ref: None)		
At least once	0.85	0.92
	(0.60 – 1.21)	(0.62 - 1.36)

95% confidence interval in parentheses
*** p<0.001, ** p<0.01, * p<0.05, ^ p<0.1

Table 10.4. Determinants of any current contraceptive use among women in Ethiopia.

(Ethiopia) Explanatory variables of interest	Unadjusted OR	Adjusted OR
Age (Range: 18-48)	0.94***	0.95***
	(0.92 – 0.96)	(0.93 - 0.98)
Wealth Quintile (Ref: Lowest)		
Second	1.70^	1.49^
	(1.11 – 2.62)	(0.93 - 2.38)
Middle	1.10	1.08
	(0.71 – 1.69)	(0.67 - 1.73)
Fourth	2.39***	2.01**
	(1.56 - 3.68)	(1.25 - 3.24)
Highest	4.24***	2.36***
	(2.70 - 6.66)	(1.42 - 3.90)
Respondent lives with spouse (Ref: No)		
Yes	2.00*	2.32*
	(1.01 – 3.99)	(1.09 - 4.95)
Discriminatory gender norms: Sexual relationships (Ref: Continuous)	0.87***	0.90***
	(0.84 – 0.91)	(0.85 - 0.94)
Contraceptive method knowledge (Ref: 0-6 methods)		
7 or more methods	1.24^	0.97
	(0.94 – 1.64)	(0.69 - 1.38)
Knowing where to obtain a FP method (Ref: No)		
Yes	1.45	0.84
	(0.91 – 2.32)	(0.47 - 1.50)
Sources of FP information (Ref: None)		
1 source	2.95***	1.89**
	(1.99 – 4.37)	(1.16 - 3.07)
2 sources	2.72***	1.44
	(1.80 – 4.12)	(0.87 - 2.41)
3 or more sources	1.56*	0.91
	(0.96 – 2.53)	(0.50 - 1.68)
Frequency of couple FP communication (Ref: Never)		
Once	4.09***	3.37***
	(2.43 – 6.90)	(1.85 - 6.15)
Twice	2.04***	1.89**
	(1.38 – 2.99)	(1.18 - 3.01)
Three or more	2.59***	2.02**
	(1.87 – 3.59)	(1.29 - 3.15)
Contraceptive self-efficacy (Ref: Low)		
High	1.69***	1.25
	(1.27 – 2.25)	(0.83 - 1.86)
Health worker home-visits in past 6 months (Ref: None)		
At least once	1.34*	1.13
	(1.01 – 1.77)	(0.82 - 1.56)
Out of 10 couples, how many are thought to use FP (Ref: 0-3)		
4-6	1.04	1.66
	(0.51 – 2.12)	(0.74 - 3.73)
7-10	1.63	1.63
	(0.84 – 3.16)	(0.77 - 3.44)
Out of 10 couples, how many are thought to approve of using FP (Ref: 0-3) [2]		
4-6	0.44***	0.47*
	(0.27 – 0.73)	(0.26 - 0.84)
7-10	0.64*	0.58*
	(0.41 – 1.01)	(0.34 - 0.97)

95% confidence interval in parentheses
*** p<0.001, ** p<0.01, * p<0.05, ^ p<0.1
[2] Note that the direction of this relationship is opposite to trends typically seen with social norms related to FP and contraceptive use. The best model fit includes this variable, but further investigation of potential spuriousness or collinearity is needed to understand this association before drawing firm conclusions.

Table 10.5. Determinants of any current contraceptive use among women in Mali.

(Mali) Explanatory variables of interest	Unadjusted OR	Adjusted OR
Age (Ref: 15-24)		
25-29	1.45^	1.03
	(0.98 – 2.15)	(0.63 - 1.67)
30-34	2.03***	1.77*
	(1.35 – 3.05)	(1.06 - 2.96)
35-49	1.51*	1.38
	(0.99 – 2.31)	(0.82 - 2.32)
Wealth terciles (Ref: Low)		
Middle	1.40^	1.64*
	(0.95 – 2.08)	(1.01 - 2.64)
High	2.76***	2.38***
	(1.92 – 3.97)	(1.47 - 3.87)
Contraceptive method knowledge (Ref: None) methods)		
1 or more methods	0.87	0.74
	(0.64 – 1.19)	(0.49 - 1.09)
Knowing where to obtain a FP method (Ref: No)		
Yes	8.73***	2.92*
	(3.86 – 18.19)	(1.16 - 7.35)
Sources of FP information (Ref: None)		
1 source	3.99***	1.77*
	(2.58 – 6.16)	(1.03 - 3.03)
2 sources	3.74***	1.11
	(2.24 – 6.26)	(0.59 - 2.10)
3 or more sources	6.38***	1.50
	(3.65 – 11.18)	(0.75 - 2.99)
Frequency of couple FP communication (Ref: Never)		
Once	5.48***	2.76***
	(3.37 – 8.92)	(1.57 - 4.85)
Twice	5.65***	2.93***
	(3.52 – 9.08)	(1.70 - 5.05)
Three or more	10.33***	4.66***
	(6.69 – 15.95)	(2.80 - 7.74)
Contraceptive self-efficacy score (Range: 0-16)	1.43***	1.35***
	(1.35 – 1.53)	(1.26 - 1.45)
Exposure to mass media (Ref: None)		
At least 1x/week	2.02**	1.29
	(1.30 – 3.12)	(0.74 - 2.24)
Use of social media (Ref: No)		
Yes	2.86***	1.14
	(1.91 – 4.29)	(0.67 - 1.95)
Health worker home-visits in past 6 months (Ref: None)		
Once	1.14	0.92
	(0.61 – 2.12)	(0.42 - 1.99)
Twice	1.98**	1.48
	(1.24 – 3.18)	(0.82 - 2.67)
Three or more	1.87**	0.98
	(1.21 – 2.89)	(0.57 - 1.68)

95% confidence interval in parentheses
*** p<0.001, ** p<0.01, * p<0.05, ^ p<0.1

Chapter Eleven: Adolescent health

Chapter 11 describes key aspects of adolescent health for girls and boys. This chapter is organized into four sections: 1) maternal health; 2) menstrual health management; 3) family planning; and 4) nutrition. Participants' responses in Bangladesh, Ethiopia, and Mali are described within each section.

Maternal health

Table 11.1 shows adolescent girls' and boys' self-reported knowledge of ANC and danger signs, sources of information, and bounded descriptive norms related to key maternal health behaviors.

Knowledge of ANC and danger signs

In Bangladesh, more adolescent girls knew that pregnant women should receive four or more ANC visits (51.2%) and should start ANC in the first trimester (45.2%) as compared to adolescent boys (31.9% and 39.0%, respectively). This trend was reversed in Ethiopia where two-thirds of adolescent boys knew that women should attend at least four ANC visits (65.1%) and start them in the first trimester (62.5%) as compared to 53.8% and 58.1% of adolescent girls, respectively. In Mali, about four in ten adolescents knew that pregnant women should attend at least four ANC visits (41.0% girls; 37.6% boys).

Knowledge of danger signs during pregnancy and/or delivery was highest in Ethiopia and lowest in Mali among adolescent girls and boys. In Bangladesh, the most recognized danger signs were fever, chills, and vomiting (59.8% girls; 33.6% boys) and severe headaches, dizziness, and blurred vision (48.2% girls; 32.5%). The same trend was observed in Mali; however, knowledge levels were much lower. About one-quarter of adolescents named fever, chills, and vomiting (27.7% girls; 26.1% boys) and 14.2% of girls and 12.2% of boys named severe headaches, dizziness, and blurred vision. In Ethiopia, the most recognized danger sign was vaginal bleeding or discharged (58.3% girls; 46.8% boys) followed by fever, chills, and vomiting (37.8% girls; 30.7% boys).

Sources of pregnancy information

In Bangladesh, 46.7% of adolescent girls and 58.4% of adolescent boys said they had no source of pregnancy information. One-third (32.0%) of girls and 19.8% of adolescent boys had one source of pregnancy information. The top three sources of pregnancy information for adolescent girls were other sources (16.%), family and friends (15.5%), and television (10.8%) and for adolescent boys were television (14.9%), health development army leader (8.6%), and other sources (7.8%).

More adolescents in Ethiopia reported having no source of pregnancy information (69.8% girls; 72.4% boys). About one-fifth (20.6%) of adolescent boys and 17.6% of adolescent girls said they had one source. Adolescent girls received pregnancy information primarily from health extension workers (14.1%), radio (6.1%), or health worker (6.8%), whereas adolescent boys obtained information from health workers (17.8%) health extension workers (10.8%), as well as family and friends (6.5%).

In Mali, over half of adolescent girls (57.3%) and adolescent boys (51.8%) did not have any source of pregnancy information. Nearly three in ten adolescents said they had one source (28.5% girls; 29.1% boys). Radio (15.9% girls; 21.6%), family and friends (10.7% girls; 9.9% boys), community volunteer (12.2% girls; 16.5% boys) emerged as the primary sources of pregnancy information for adolescents.

Bounded descriptive norms about ANC

We asked adolescent girls and boys their perceived prevalence of pregnant women starting ANC during the first trimester and attending at least four ANC visits. In Bangladesh, early timing of ANC was perceived as fairly common with 35.3% of adolescent girls and 36.4% boys reporting that 4-6 pregnant women out of 10 in their communities started ANC in the first trimester. A larger percentage of adolescent girls (46.2%) and boys (47.8%) reported that 4-6 pregnant women in their communities attended at least four ANC visits. A similar trend emerged in Mali. About one-third of adolescent girls (36.1%) and boys (32.8%) reported that 4-6 pregnant women in their communities started ANC early and 43.6% of adolescent girls and 35.6% of adolescent boys reported that 4-6 pregnant women attended at least four ANC visits. In Ethiopia, more adolescent girls (47.8%) perceived starting ANC in the first trimester to be fairly common (4-6 women out of 10) as compared to adolescent boys (38.6%). Attending at least four ANC visits was also perceived to be common with almost half of adolescent girls (46.0%) and boys (45.0%) reporting that 4-6 pregnant women would do this.

Bounded descriptive norms about birth preparedness

We asked adolescent girls and boys their perceived prevalence of two birth preparedness actions: arranging for emergency transport for delivery and saving money in case of an emergency. In Bangladesh, 35.3% of adolescent boys and 20.4% of adolescent girls reported that 4-6 pregnant women in their communities made arrangements for emergency transportation for. A similar trend was observed in Ethiopia where 30.4% of adolescent boys and 27.9% of adolescent girls reported that 4-6 pregnant women had made such arrangements. Adolescent girls and boys in Mali were not asked this question.

With regard to setting aside money during pregnancy in case of an emergency, nearly half of adolescent girls (43.9%) and boys (45.0%) thought that 7-10 pregnant women in their communities had done this. Fewer adolescent girls (16.7%) and boys (9.6%) in Ethiopia felt saving money during pregnancy was a widespread practice (7-10 pregnant women out of 10). In fact, roughly half of adolescent girls (46.9%) and boys (55.5%) reported that 0-3 pregnant women in their communities set aside money in the event of an emergency. Similarly, few adolescent girls (9.0%) and boys (7.6%) in Mali felt saving money during pregnancy was a widespread practice (7-10 pregnant women out of 10). In Mali, 32.4% of adolescent girls and 39.2% of adolescent boys said they did not know the prevalence of this action among pregnant women in their communities.

Bounded descriptive norms about birth complications, home birth, and post-natal care visits

We asked adolescent girls and boys their perceived prevalence of birth complications, home births, and post-natal care visits within two days of birth. In Bangladesh, about three-quarters of adolescent girls (74.2%) reported that 0-3 pregnant women experienced birth complications as compared to 53.5% of boys. A majority of adolescent girls (80.9%) and boys (79.4%) in Ethiopia reported that 0-3 pregnant women experienced birth complications. Adolescent girls and boys in Mali were not asked about birth complications.

Across all three countries, home births were not perceived to be the norm among adolescent girls and boys. In Bangladesh, 54.6% of adolescent girls and 55.4% of boys reported that 0-3 pregnant women in their communities gave birth at home. A larger percentage of adolescent girls and boys felt the same way in Ethiopia: 66.2% of adolescent girls and 61.6% of adolescent boys reported that 0-3 pregnant women in their communities gave birth at home. This trend persisted in Mali where 57.5% of adolescent girls and 58.0% of adolescent boys reported that 0-3 pregnant women in their communities delivered their baby at home. One-fifth of adolescent girls (20.8%) and boys (20.6%) said they did not know how many pregnant women in their communities out of 10 gave birth at home.

According to adolescent girls and boys across all three countries, it was not common for women to have a post-natal care visit within two days of giving birth. Most adolescent girls (73.1%) and boys (65.7%) in Bangladesh said that 0-3 women had received a post-natal care visit with two days of delivering. In Ethiopia, 72.4% of adolescent boys said that 0-3 women had received a post-natal care visit as compared to 69.4% adolescent girls. Similarly, 51.7% of adolescent girls and 44.0% of adolescent boys reported that 0-3 women had received a post-natal care visits. It is worth noting that over a quarter of adolescent girls (26.4%) and boys (28.7%) said they did not know how many women out of 10 received a post-natal care visit within two days of giving birth.

Tables

Table 11.1. Levels of maternal health influencing factors among adolescents across the three study settings

	Girls			Boys		
	Bangladesh N=465	**Ethiopia N=444**	**Mali N=466**	**Bangladesh N=464**	**Ethiopia N=427**	**Mali N=436**
ANC Knowledge						
Knows pregnant women should go for 4 or more ANC visits	238 (51.2)	239 (53.8)	191 (41.0)	148 (31.9)	278 (65.1)	164 (37.6)
Knows women should go for ANC during first trimester	210 (45.2)	258 (58.1)		181 (39.0)	267 (62.5)	
Knowledge of danger signs during pregnancy and/or delivery						
Vaginal bleeding or discharge	122 (26.2)	259 (58.3)	23 (4.9)	33 (7.1)	200 (46.8)	17 (3.9)
Severe headaches, dizziness, blurred vision	224 (48.2)	126 (28.4)	66 (14.2)	151 (32.5)	115 (26.9)	53 (12.2)
Severe abdominal pain or contractions before 37 weeks	50 (10.8)	78 (17.6)	35 (7.5)	21 (4.5)	27 (6.3)	46 (10.6)
Extreme swelling of hands, feet, or face	90 (19.4)	112 (25.2)	49 (10.5)	40 (8.6)	36 (8.4)	31 (7.1)
Fever, chills, vomiting	278 (59.8)	168 (37.8)	129 (27.7)	156 (33.6)	131 (30.7)	114 (26.1)
Prolonged labor (12+ hours)	18 (3.9)	116 (26.1)	12 (2.6)	2 (0.4)	95 (22.2)	10 (2.3)
High blood pressure	27 (5.8)	98 (22.1)	26 (5.6)	13 (2.8)	31 (7.3)	36 (8.3)
Decreased/ absent fetal movement	11 (2.4)	102 (23.0)	5 (1.1)	1 (0.2)	36 (8.4)	1 (0.2)
Placenta not delivered within 1 hour post birth	3 (0.6)	74 (16.7)	0 (0.0)	0 (0.0)	68 (15.9)	0 (0.0)
Fast or difficult breathing	5 (1.1)	25 (5.6)	2 (0.4)	10 (2.2)	66 (15.5)	2 (0.5)
Mean number of dangers signs known	0.9 (1.2)	2.6 (1.9)	0.7 (0.9)	1.8 (1.2)	1.9 (1.7)	0.7 (0.9)
Sources of pregnancy information						
None	217 (46.7)	310 (69.8)	267 (57.3)	271 (58.4)	309 (72.4)	226 (51.8)
1 source	149 (32.0)	78 (17.6)	133 (28.5)	92 (19.8)	88 (20.6)	127 (29.1)
2 sources	72 (15.5)	29 (6.5)	50 (10.7)	53 (11.4)	24 (5.6)	58 (13.3)
3 or more sources	27 (5.8)	27 (6.1)	16 (3.4)	48 (10.3)	6 (1.4)	25 (5.7)
Bounded descriptive norms: Number of pregnant women out of 10 who start ANC in the first trimester						
0-3	135 (29.0)	135 (30.4)	107 (23.0)	163 (35.1)	207 (48.5)	93 (21.3)
4-6	164 (35.3)	212 (47.8)	168 (36.1)	169 (36.4)	165 (38.6)	143 (32.8)
7-10	166 (35.7)	97 (21.9)	168 (36.1)	132 (28.5)	55 (12.9)	70 (16.1)
Don't know			118 (25.3)			130 (29.8)
Bounded descriptive norms: Number of pregnant women out of 10 who attend at least four ANC visits						
0-3	103 (22.2)	117 (26.4)	88 (18.9)	86 (18.5)	92 (21.6)	97 (22.3)
4-6	215 (46.2)	220 (46.05)	203 (43.6)	222 (47.8)	192 (45.0)	155 (35.6)
7-10	147 (31.6)	107 (24.1)	65 (14.0)	156 (33.6	143 (33.5)	59 (13.5)
Don't know			110 (23.6)			125 (28.7)
Bounded descriptive norms: Number of pregnant women out of 10 who arrange for emergency transport for delivery						
0-3	262 (56.3)	194 (43.7)		110 (23.7)	246 (57.6)	
4-6	95 (20.4)	124 (27.9)		164 (35.3_	130 (30.4)	
7-10	108 (23.2)	126 (28.4)		190 (41.0)	51 (12.0)	
Bounded descriptive norms: Number of pregnant women out of 10 who set aside money in case of an emergency						
0-3	138 (29.7)	208 (46.9)	195 (41.9)	100 (21.6)	237 (55.5)	142 (32.6)
4-6	123 (26.5)	162 (36.5)	78 (16.7)	155 (33.4)	149 (34.9)	90 (20.6)
7-10	204 (43.9)	74 (16.7)	42 (9.0)	209 (45.0)	41 (9.6)	33 (7.6)
Don't know			151 (32.4)			171 (39.2)
Bounded descriptive norms: Number of pregnant women out of 10 who experience complications during pregnancy						
0-3	345 (74.2)	359 (80.9)		248 (53.5)	339 (79.4)	
4-6	95 (20.4)	76 (17.1)		170 (36.6)	79 (18.5)	
7-10	25 (5.4)	9 (2.0)		46 (9.9)	9 (2.1)	
Bounded descriptive norms: Number of pregnant women out of 10 who give birth at home						
0-3	254 (54.6)	294 (66.2)	268 (57.5)	257 (55.4)	263 (61.6)	253 (58.0)
4-6	146 (31.4)	118 (26.6)	81 (17.4)	154 (33.2)	140 (32.8)	71 (16.3)
7-10	65 (14.0)	32 (7.2)	20 (4.3)	53 (11.4)	24 (5.6)	22 (5.1)
Don't know			97 (20.8)			90 (20.6)
Bounded descriptive norms: Number of pregnant women out of 10 who have a post-natal care visits within two days of giving birth						
0-3	340 (73.1)	308 (69.4)	241 (51.7)	305 (65.7)	309 (72.4)	192 (44.0)
4-6	88 (18.9)	63 (14.2)	45 (9.7)	101 (21.8)	86 (20.2)	46 (10.6)
7-10	37 (8.0)	73 (16.4)	57 (12.2)	58 (12.5)	32 (7.5)	73 (16.7)
Don't know			123 (26.4)			125 (28.7)

Menstrual Health Management (MHM)

Table 11.2 shows adolescent girls' menstruation and menstrual hygiene management practices.

Almost all the adolescent girls in the sample from Bangladesh had started menstruating as compared to 79.1% in Ethiopia and 83.7% in Mali. Three-quarters (74.0%) of adolescent girls in Bangladesh and 54.4% of adolescents in Ethiopia used sanitary napkins to manage their periods. In contrast, adolescent girls in Mali more commonly used cotton or synthetic cloth (85.6%).

One key behavior related to MHM is changing one's menstrual absorbent at least three times a day. Roughly half of adolescent girls in Bangladesh reported doing so as compared to only 29.9% in Ethiopia and 37.2% in Mali. Reuse of cloth – either cotton or synthetic – during the same menstrual cycle was fairly common among adolescent girls: 66.7% in Bangladesh, 74.6% in Ethiopia, and 60.2% in Mali. A second important MHM behavior is washing cloth with soap if it will be reused. Most adolescent girls in Bangladesh reported doing this (84.2%) and this practice was near universal in Ethiopia (98.0%), whereas only about half (53.9%) of adolescent girls in Mali said they washed their cloth with soap.

We created a measure for adequate MHM defined as an adolescent girl who 1) uses sanitary pads and changes them three or more times a day; or 2) always uses a new cloth (not reused during the same cycle) and changes it three or more times a day; or 3) uses a cloth that she reuses but changes it three or more times a day and washes it with soap. Based on this measure, 48.7% of adolescent girls in Bangladesh, 94.0% in Ethiopia, and 25.9% in Mali practiced adequate MHM.

Tables

Table 11.2. Menstruation and menstrual health management as described by adolescent girls across the three study settings.

	Bangladesh N=465	**Ethiopia N=444**	**Mali N=466**
	n (%)	n (%)	n (%)
Started menstruating	462 (99.4)	351 (79.1)	390 (83.7)
Uses cotton or synthetic cloth as menstrual absorbent	120 (26.0)	126(35.9)	334(85.6)
Uses a sanitary napkin as a menstrual absorbent	342 (74.0)	191(54.4)	41(10.5)
Changes menstrual absorbent (cloth or sanitary napkin) three or more times a day	225 (48.7)	105(29.9)	145(37.2)
Reuses cloth used once during the same cycle (cloth users only)	80 (66.7)	94(74.6)	201(60.2)
Washes cloth with soap for reuse (cloth users only)	101 (84.2)	100(98.0)	180(53.9)
Practices adequate MHM[a]	225 (48.7)	171 (94.0)	101 (25.9)
[a]Adequate menstrual health management was defined as using a sanitary pad and changing it three or more times a day OR using a new cloth (not re-used during the same cycle) and changing it three or more times a day, OR using a cloth that is used for multiple periods so long as it changed three or more times a day and is washed with soap			

Family Planning

Bangladesh

Most adolescent girls could spontaneously name and at least one modern contraceptive method (80.4%), whereas only about half of adolescent boys could do so (48.9%). Among adolescent girls, knowledge of contraceptive methods was highest for pills (77.6%), injectables (46.5%), and male condoms (36.8%). Among adolescent boys, knowledge was highest for male condoms (42.5%), pills (33.2%), and injectables (18.3%). One-third (33.6%) of adolescent girls and half of adolescent boys (51.7%) reported not having any source of family planning information in the past 12 months.

We asked adolescent girls and boys about the perceived prevalence of couples with three or more children and those who approve family planning to avoid an unwanted pregnancy. About four in ten adolescent girls (43.2%) and boys (42.0%) reported that 4-6 couples in their communities had three or more children and 44.3% of adolescent girls and 43.8% of boys said that 0-3 couples had three or more children. Approval for family planning to avoid an unwanted pregnancy was perceived to be more widespread by adolescent girls; 55.5% of adolescent girls said that 7-10 couples would approve of FP for this purpose as compared to 42.7% of adolescent boys.

Ethiopia

Most adolescent girls (88.7%) could name at least one modern contraceptive method, whereas only two-thirds (68.6%) of adolescent boys could. Among adolescent girls, knowledge of contraceptive methods was highest for injectables (82.7%), pills (80.2%), and implants (71.8%). Among boys, knowledge was highest for pills (61.8%), injectables (61.4%), and implants (56.4%). Adolescents in Ethiopia were asked if they currently used a family planning method: 22.1% of adolescent girls and 10.8% of adolescent boys said they did. Nearly half (47.1%) of adolescent girls and three-quarters (71.7%) of adolescent boys reported not having any source of family planning information in the past 12 months.

We asked adolescent girls and boys about the perceived prevalence of couples with three or more children, approval of family planning to avoid an unwanted pregnancy, and family planning use among couples. There were important gender differences for all three bounded descriptive norms. About half of adolescent girls (53.8%) reported that 4-6 couples in their communities have three or more children as compared to only 35.1% of adolescent boys. Over half of adolescent boys (54.1%) said that 7-10 couples in their communities had three or more children as compared to only 36.3% of adolescent girls. With regard to approval of family planning to avoid an unwanted pregnancy, over half of adolescent girls (52.9%) reported that 7-10 couples approved of family planning for this purpose, whereas only 39.8% of adolescent boys said the same. Couple's use of family planning was perceived to be low among adolescent girls (51.6% said that 0-3 couples used family planning). One third of boys (33.7%) reported that 4-6 couples used family planning and another 38.6% said 7-10 couples used family planning.

Mali

Nearly half of adolescent girls (46.8%) and 45.2% of adolescent boys could name at least one modern contraceptive method. Among adolescents, knowledge of contraceptive methods was highest for withdrawal (35.4% girls; 31.9% boys), female condoms (22.5% girls; 16.1% boys) and male condoms (21.2% girls; 17.4% boys). Most adolescent girls (82.0%) had at least one source of family planning information in the past year. In contrast, the three-

quarters (71.17%) of adolescent boys reported not having any sources of family planning information within the past year.

Tables

Table 11.3. Family planning-related knowledge, contraceptive practices, and bounded descriptive norms across the three study settings.

	Girls			Boys		
	Bangladesh N=465	**Ethiopia N=444**	**Mali N=466**	**Bangladesh N=464**	**Ethiopia N=427**	**Mali N=436**
	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)
Spontaneous knowledge of contraceptive methods						
Any method	374 (80.4)	295 (69.1)	219 (47.0)	227 (48.9)	295 (69.1)	200 (45.9)
Any modern method	374 (80.4)	394 (88.7)	218 (46.8)	227 (48.9)	293 (68.6)	197 (45.2)
Mean number of methods known	1.8 (1.4)	4.1 (2.6)	2.2 (3.4)	1.1 (1.4)	3.6 (3.2)	1.6 (2.7)
Mean number of modern methods known	1.09 (1.4)	3.9 (2.3)	1.8 (2.8)	1.8 (1.4)	2.1 (2.6)	1.4 (2.3)
Any modern method						
Female sterilization	21 (4.5)	58 (13.1)	72 (15.5)	19 (4.1)	35 (8.2)	40 (9.2)
Male sterilization	14 (3.0)	23 (5.2)	76 (16.3)	18 (3.9)	31 (7.3)	37 (8.5)
IUD	14 (3.0)	134 (30.2)	80 (17.2)	2 (0.4)	98 (23.0)	54 (12.4)
Injectables	216 (46.5)	367 (82.7)	63 (13.5)	85 (18.3)	262 (61.4)	62 (14.2)
Implants	42 (9.0)	319 (71.8)	62 (13.3)	4 (0.9)	241 (56.4)	69 (15.8)
Pill	361 (77.6)	356 (80.2)	70 (15.0)	154 (33.2)	264 (61.8)	54 (12.4)
Male condom	171 (36.8)	231 (52.0)	99 (21.2)	197 (42.5)	226 (52.9)	76 (17.4)
Female condom	3 (0.6)	114 (25.7)	105 (22.5)	4 (0.9)	117 (27.4)	70 (16.1)
Emergency contraception	7 (1.5)	55 (12.4)	68 (14.6)	24 (5.2)	25 (5.9)	49 (11.2)
Standard days method	2 (0.4)	40 (9.0)	95 (20.4)	1 (0.2)	19 (4.4)	61 (14.0)
Lactational amenorrhea (LAM)	2 (0.4)	38 (8.6)	88 (18.9)	0 (0.0)	20 (4.7)	44 (10.1)
Any traditional method						
Rhythm	2 (0.4)	76 (17.1)	91 (19.5)	0 (0.0)	103 (24.1)	50 (11.5)
Withdrawal	2 (0.4)	17 (3.8)	165 (35.4)	4 (0.9)	98 (23.0)	139 (31.9)
Currently uses a FP method	-	98 (22.1)	-	-	46 (10.8)	-
Number of sources of FP information in the past 12 months						
None	156 (33.6)	209 (47.1)	5 (1.07)	240 (51.7)	306 (71.7)	4 (0.9)
1 source	110 (23.7)	93 (21.0)	382 (82.0)	79 (17.0)	99 (23.2)	367 (84.2)
2 sources	110 (23.7)	86 (19.4)	51 (10.9)	71 (15.3)	19 (4.5)	41 (9.4)
3 or more sources	89 (19.1)	56 (12.6)	28 (6.0)	74 (16.0)	3 (0.7)	24 (5.5)
Bounded descriptive norms: Number of couples out of 10 who have three or more children						
0-3	206 (44.3)	44 9.91	83 17.81	203 (43.8)	46 10.77	69 15.83
4-6	201 (43.2)	239 53.83	146 31.33	195 (42.0)	150 35.13	153 35.1
7-10	58 (12.5)	161 36.26	130 27.90	66 (14.2)	231 54.10	130 29.82
Don't know			107 22.96			84 19.27
Bounded descriptive norms: Number of couples out of 10 who approve of family planning to avoid an unwanted pregnancy						
0-3	99 (21.3)	77 (17.3)	154 (33.1)	142 (30.6)	120 (28.1)	127 (29.1)
4-6	108 (23.2)	132 (29.7)	72 (15.5)	124 (26.7)	137 (32.1)	63 (14.5)
7-10	258 (55.5)	235 (52.9)	52 (11.2)	198 (42.7)	170 (39.8)	42 (9.6)
Don't know			188 (40.3)			204 (46.8)
Bounded descriptive norms: Number of couples out of 10 who use family planning						
0-3		229 (51.6)	154 (33.1)		118 (27.6)	127 (29.1)
4-6		139 (31.3)	72 (15.5)		144 (33.7)	63 (14.5)
7-10		76 (17.1)	52 (11.2)		165 (38.6)	42 (9.6)
Don't know			188 (40.3)			204 (46.8)

Nutrition

Adolescent diets

Bangladesh

Most adolescent girls (89.5%) and adolescent boys (75.0%) reported eating three or more meals the previous day, but only 17.0% of adolescent girls and 7.3% of adolescent boys said they usually eat four or more meals a day. Adolescent boys were more likely to report squeezing lemon on their food (58.0%) than adolescent girls (40.2%). In the past week, 22.8% of adolescent girls and 19.5% of boys said they squeezed lemon on their food three or more times. Adolescent diets were moderately diverse, with a mean dietary diversity score of 4.5 for girls and 4.4 for boys. Adolescents diets consisted of primarily the same food groups: starchy staples (99.6% girls; 100.% boys), meat or fish (78.5% girls; 71.3% boys), other fruits and vegetables (72.3% girls; 54.3% boys), and dark green leafy vegetables (65.4% girls; 58.2%).

Ethiopia

On average, adolescents reported usually eating three meals a day. Few adolescents reported squeezing lemon on their food (3.8% girls; 1.9%). Adolescent diets were not very diverse with a mean score of 3.2 for adolescent girls and 2.9 for adolescent boys. On the previous day, adolescents more commonly reported eating starchy staples (95.1% girls; 93.9% boys), legumes, nuts, and seeds (92.1% girls; 86.7% boys), and other fruits and vegetables (85.4% girls; 79.9% boys). Almost all adolescents reported consuming no animal source foods the previous day (96.6% girls; 98.6% boys).

Fasting is a common practice among Orthodox Christians in Ethiopia, and this is also true among adolescents. Adolescent girls reported currently fasting for 23.3 days and adolescent boys for 21.0 days. When fasting, most adolescent girls (84.5%) and 70.3% of adolescent boys said they ate 1-2 meals and four in ten reported they would continue to fast if feeling unwell (42.6% girls; 40.8% boys). A little over one-third (36.7%) of adolescent girls and half of adolescent boys (49.9%) felt that out of 10 pregnant women in their community, six or more would fast during their pregnancy.

Mali

About three-quarters of adolescent girls (77.0%) and boys (75.9%) reported eating three or more meals the previous day. Just over one-third of adolescents (35.1% girls; 36.0% boys) reported squeezing lemon on their food. In the past week, 41.4% of adolescent girls and 44.7% of adolescent boys reported squeezing lemon on their food three or more times. Adolescent diets in Mali were diverse, with mean dietary diversity scores of 6.1 for adolescent girls and 6.5 for adolescent boy. Their diets the previous day consisted primarily of starchy staples (98.7% girls; 99.8% boys), meat or fish (89.7% girls; 90.1% boys), and fruits and vegetables not considered rich in Vitamin A (88.8% girls; 96.3% boys). On average, adolescent girls consumed 2.6 and adolescent boys 2.9 animal source foods the prior day.

Nutrition-related knowledge and information sources

Bangladesh

When asked how many days a pregnant woman should take iron tablets or syrup, 45.2% of adolescent girls said 90 or more days and another 41.7% said they did not know. Even more adolescent boys (76.9%) were unsure how many days pregnant women should take iron supplements. Nearly one-third of adolescent girls (31.2%) and 41.6% of adolescent boys said they had no source of nutrition information.

Ethiopia

Over half of adolescent girls (57.2%) and 68.2% of adolescent boys said they did not know for how many days a pregnant woman should take iron supplements. One-fifth of adolescent girls and 26.0% of adolescent boys said pregnant women should take iron supplements for 0-60 days. Adolescents have few sources of nutrition information. Over half (58.1%) of adolescent girls and 71.4% of adolescent boys reporting no sources and 25.2% of adolescent girls and 23.9% of adolescent boys said they had only one source of such information.

Mali

Two-thirds of adolescents (66.9% girls; 69.4% boys) said they did not know for how many days a pregnant woman should take iron supplements. Few adolescents knew that women should take iron supplements for 90 days or more (15.8% girls; 11.8% boys). Eight in ten adolescents said they had one source of nutrition information.

Bounded descriptive norms relating to nutrition

We asked adolescent girls and boys a series of questions about the perceived prevalence of eating an evening snack every day, eating breakfast every day, eating less food than expected each day, and eating green leafy vegetables two or more times a week. Both adolescent girls and boys were asked to estimate the perceived prevalence of these behaviors for girls and boys separately in order to detect gender-based differences.

Bangladesh

Most adolescent boys (60.1%) said that 0-3 girls eat a snack at night as compared to only 44.3% of adolescent girls. When asked about boys' consumption of an evening snack, 45.6% of adolescent girls and 34.5% of boys said that 4-6 boys ate a snack each evening. Eating breakfast each day was perceived to be widespread among boys and girls. Half of adolescent girls (52.7%) and 72.4% of adolescent boys said that 7-10 girls in their communities eat breakfast each day. This was perceived to be even more common among boys with 62.6% of adolescent girls and 81.9% of adolescent boys reporting that 7-10 boys eat breakfast each day.

Adolescent boys were more likely to perceive eating less food than expected each day to be a common occurrence as compared to adolescent girls. About a quarter (24.5%) of adolescent girls and 41.4% of boys said that 4-6 girls eat less food than expected each day. When asked about boys, 18.4% of adolescent girls and 41.4% of adolescent boys reported that 4-6 boys eat less food than expected on a daily basis. Adolescent girls and boys described eating leafy green vegetables two or more times a week as widespread among girls and boys in their communities. Two-thirds (65.0%) of adolescent girls and 69.8% of adolescent boys said that 7-10 girls each leafy green vegetables regularly and 60.7% of adolescent girls and 70.5% of adolescent boys said that 7-10 boys do the same.

Ethiopia

Half of adolescent girls (50.2%) and 42.6% of adolescent boys reported that 4-6 girls have an evening snack every day and 48.2% of adolescent girls and 40.3% of adolescent boys reported that 4-6 girls have an evening snack every day. More adolescent girls perceived 7-10 girls (56.3%) or boys (56.8%) to eat breakfast daily as compared to adolescent boys (32.5% said 7-10 girls vs 40.8% said 7-10 boys).

Adolescent girls and boys thought eating less than expected each day was uncommon for either girls or boys in their communities. Only 13.5% of adolescent girls and 17.1% of adolescent boys said that 4-6 girls eat less than expected each day. Similarly, only 14.2% of adolescent girls and 16.6% of adolescent boys reported that 4-6 boys eat less than expected each day. Eating leafy green vegetables two or more times a week was perceived to be common among girls and boys. One-third of adolescent girls (33.3%) and 22.4% of adolescent boys reported that 4-6 girls in their communities eat green leafy vegetables at least twice a week. Prevalence estimates were similar for boys with 33.3% of adolescent girls and 26.0% of adolescent boys reporting that 4-6 boys eating leafy greens two or more times a week.

Mali

Over one-third of adolescent girls (37.8%) and 30.5% of adolescent boys reported that 4-6 girls eat an evening snack every day. Eating an evening snack was perceived to be more common among boys with 48.2% of adolescent girls and 40.3% of adolescent boys reporting that 4-6 boys doing this. Adolescents thought most girls in their communities eat breakfast regularly with 64.4% of adolescent girls and 69.7% of adolescent boys reporting that 7-10 girls did this. (This question is missing for boys).

Adolescent boys were less likely to think that eating less food than expected each day was an issue (for either girls or boys) than adolescent girls. A quarter (25.8%) of adolescent girls and 19.0% of adolescent boys reported that 4-6 girls eat less food than expected each day. As for boys, 24.5% of adolescent girls and 19.3% of adolescent boys reported that 4-6 boys eat less than expected on a daily basis. Finally, the consumption of leafy green vegetables was common for girls and boys alike: 26.6% of adolescent girls and 24.1% of adolescent boys reported that 4-6 girls eat green leafy vegetables at least twice a week and 28.5% of adolescent girls and 23.6% of adolescent boys said 4-6 boys do the same.

Tables

Table 11.4. Adolescents' dietary patterns across the three study settings.

	Adolescent Girls (15-19)			Adolescent Boys (15-19)		
	Bangladesh N=465	**Ethiopia N=444**	**Mali N=466**	**Bangladesh N=464**	**Ethiopia N=427**	**Mali N=436**
	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)
Ate 3 or more meals yesterday	416 (89.5)	231 (52.0)	359 (77.0)	348 (75.0)	220 (51.5)	331 (75.9)
Mean number of meals eaten yesterday	3.1 (0.7)	2.6 (0.7)	2.8 (0.7)	2.8 (0.6)	2.5 (0.6)	2.8 (0.7)
Usually eats 4 or more meals a day	79 (17.0)	157 (35.4)	49 (10.5)	34 (7.3)	104 (24.1)	37 (8.5)
Mean number of meals usually eaten	3.1 (0.6)	3.3 (0.5)	2.8 (0.7)	2.9 (0.5)	3.2 (0.5)	2.9 (0.7)
Squeezes lemon on food	187 (40.2)	17 (3.8)	163 (35.2)	269 (58.0)	8 (1.9)	161 (36.9)
Number of times in the past week adolescent squeezed lemon on food						
Zero times	301 (64.7)	-	101 (21.7)	245 (52.8)	-	93 (21.3)
1-2 times	58 (12.7)	-	172 (36.9)	128 (27.6)	-	148 (33.9)
3 or more times	106 (22.8)	-	193 (41.4)	91 (19.6)	-	195 (44.7)
Consumes leafy green vegetables	449 (96.6)	245 (55.2)	401 (86.8)	459 (98.9)	249 (58.3)	375 (86.2)
Consumed the following foods yesterday						
Starchy staples: Cereals and white roots and tubers	463 (99.6)	422 (95.1)	460 (98.7)	464 (100)	401 (93.9)	435 (99.8)
Dark green leafy vegetables	304 (65.4)	77 (18.0)	321 (68.9)	270 (58.2)	110 (24.8)	319 (73.2)
Vitamin A rich fruits and vegetables	157 (33.8)	57 (12.8)	335 (71.9)	166 (35.8)	57 (13.4)	321 (73.6)
Other fruits and vegetables	336 (72.3)	379 (85.4)	414 (88.8)	252 (54.3)	341 (79.9)	420 (96.3)
Offal (organ meat)	10 (2.2)	3 (0.7)	127 (27.3)	41 (8.8)	2 (0.5)	153 (35.1)
Meat and fish	365 (78.5)	7 (1.6)	418 (89.7)	331 (71.3)	4 (0.9)	393 (90.1)
Eggs	177 (38.1)	10 (2.3)	177 (38.0)	219 (47.2)	3 (0.7)	201 (46.1)
Legumes, nuts, and seeds	140 (30.1)	409 (92.1)	262 (56.2)	131 (28.2)	370 (86.7)	280 (64.2)
Milk and milk products	157 (33.8)	2 (0.5)	285 (61.2)	132 (28.4)	8 (1.8)	302 (69.3)
Mean dietary diversity score (9 total)	4.5 (1.3)	3.2 (0.9)	6.1 (2.0)	4.4 (1.8)	2.9 (0.9)	6.5 (2.1)
Mean number of animal source foods consumed yesterday (5 total)	1.6 (0.9)	0.1 (0.4)	2.6 (1.5)	1.7 (1.2)	0.0 (0.2)	2.9 (1.6)
Fasting (Ethiopia only)						
Mean number of days currently fasting		23.3 (6.5)	-	-	21.0 (9.0)	-
Number of meals eaten when fasting						
1-2 meals	-	375 (84.5)	-	-	300 (70.3)	-
3-4 more meals	-	69 (15.5)	-	-	127 (29.7)	-
Continues to fast if unwell	-	189 (42.6)	-	-	174 (40.8)	
Out of 10 pregnant women in your community, how many fast during their pregnancy?						
0-5	-	281 (63.3)	-	-	214 (50.1)	-
6-10	-	163 (36.7)	-	-	213 (49.9)	-

Table 11.5. Nutrition related knowledge, information sources, and bounded descriptive norms among adolescents across the three study settings.

	Adolescent Girls (15-19)			Adolescent Boys (15-19)		
	Bangladesh N=465	**Ethiopia N=444**	**Mali N=466**	**Bangladesh N=464**	**Ethiopia N=427**	**Mali N=436**
	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)
Number of days a pregnant women should take iron tablets						
None	-	5 (1.1)	9 (2.0)	2 (0.4)	1 (0.2)	6 (1.4)
0-60 days	26 (5.6)	91 (20.5)	38 (8.2)	20 (4.3)	111 (26.0)	47 (10.8)
61-89 days	35 (7.5)	31 (7.0)	33 (7.1)	7 (1.5)	18 (4.2)	29 (6.7)
90 days or more	210 (45.2)	63 (14.2)	73 (15.8)	78 (16.8)	6 (1.4)	51 (11.8)
Don't know	194 (41.7)	254 (57.2)	309 (66.9)	357 (76.9)	291 (68.2)	301 (69.4)
Sources of nutrition information						
None	145 (31.2)	258 (58.1)	6 (1.3)	193 (41.6)	305 (71.4)	2 (0.5)
1 source	120 (25.8)	112 (25.2)	380 (81.6)	101 (21.8)	102 (23.9)	352 (80.7)
2 sources	116 (25.0)	37 (8.3)	61 (13.1)	80 (17.2)	12 (2.8)	51 (11.7)
3 or more sources	84 (18.1)	37 (8.3)	19 (4.1)	90 (19.4)	8 (1.9)	31 (7.1)
Bounded descriptive norm: Number of girls out of 10 who have an evening snack every day						
0-3	206 (44.3)	105 (23.7)	114 (24.5)	279 (60.1)	123 (28.8)	97 (22.2)
4-6	190 (40.9)	223 (50.2)	176 (37.8)	148 (31.9)	182 (42.6	133 (30.5)
7-10	69 (14.8)	116 (26.1)	120 (25.8)	37 (8.0)	122 (28.6)	145 (33.3)
Don't know			56 (12.1)			61 (14.0)
Bounded descriptive norm: Number of boys out of 10 who have an evening snack every day						
0-3	83 (17.9)	108 (24.3)	117 (25.1)	156 (33.6)	102 (23.9)	107 (24.5)
4-6	212 (45.6)	214 (48.2)	168 (36.1)	160 (34.5)	172 (40.3)	139 (31.9)
7-10	170 (36.6)	122 (27.5)	114 (24.5)	148 (31.9)	153 (35.8)	134 (30.7)
Don't know			67 (14.4)			56 (12.8)
Bounded descriptive norm: Number of girls out of 10 who eat breakfast every day						
0-3	72 (15.5)	45 (10.1)	39 (8.4)	54 (11.6)	114 (26.7)	31 (7.1)
4-6	148 (31.8)	149 (33.6)	105 (22.5)	74 (16.0)	174 (40.8)	73 (16.7)
7-10	245 (52.7)	250 (56.3)	300 (64.4)	336 (72.4)	139 (32.6)	304 (69.7)
Don't know			22 (4.72)			28 (6.4)
Bounded descriptive norm: Number of boys out of 10 who eat breakfast every day						
0-3	71 (15.3)	51 (11.5)		54 (11.6)	82 (19.2)	
4-6	103 (22.2)	141 (31.8)		30 (6.5)	171 (40.1)	
7-10	291 (62.6)	252 (56.8)		380 (81.9)	174 (40.8)	
Bounded descriptive norm: Number of girls out of 10 who eat less food than expected each day						
0-3	321 (69.0)	373 (84.0)	219 (47.0)	247 (53.2)	341 (79.9)	242 (55.5)
4-6	114 (24.5)	60 (13.5)	120 (25.8)	192 (41.4)	73 (17.1)	83 (19.0)
7-10	30 (6.5)	11 (2.5)	120 (25.8)	25 (5.4)	13 (3.0)	31 (7.1)
Don't know			97 (20.8)			80 (18.4)
Bounded descriptive norm: Number of boys out of 10 who eat less food than expected each day						
0-3	354 (76.1)	374 (84.2)	210 (45.1)	249 (53.7)	344 (80.6)	245 (56.2)
4-6	85 (18.3)	63 (14.2)	114 (24.5)	192 (41.4)	71 (16.6)	84 (19.3)
7-10	26 (5.6)	7 (1.6)	38 (8.2)	23 (5.0)	12 (2.8)	30 (6.9)
Don't know			104 (22.3)			77 (17.7)
Bounded descriptive norm: Number of girls out of 10 who eat green leafy vegetables twice a week or more						
0-3	43 (9.3)	260 (58.6)	137 (29.4)	38 (8.2)	328 (76.8)	81 (18.6)
4-6	120 (25.8)	148 (33.3)	124 (26.6)	102 (22.0)	87 (20.4)	105 (24.1)
7-10	302 (65.0)	36 (8.1)	126 (27.0)	324 (69.8)	12 (2.8)	161 (36.9)
Don't know			79 (17.0)			161 (36.9)
Bounded descriptive norm: Number of boys out of 10 who eat green leafy vegetables twice a week or more						
0-3	63 (13.6)	263 (59.2)	133 (28.5)	27 (5.8)	306 (71.7)	88 (20.2)
4-6	120 (25.8)	148 (33.3)	133 (28.5)	110 (23.7)	111 (26.0)	103 (23.6)
7-10	282 (60.7)	33 (7.4)	115 (24.7)	327 (70.5)	10 (2.3)	163 (37.4)
Don't know			85 (18.2)			82 (18.8)

Chapter Twelve: Media exposure

This chapter outlines media consumption among women, men, and adolescents across the three study settings. The chapter also outlines participants' self-reported exposure to key messages on PTB. Exposure to or participation in Born on Time activities, recall of specific messages, and participants' communication about that content are also described. The chapter concludes with a brief comparison across study settings to inform conclusions and recommendations in Chapter 13.

Bangladesh

Media consumption

Table 12.1 shows media consumption and phone ownership among women, men, and adolescents in Bangladesh.

In Bangladesh, exposure to radio was low. Only 5% of women and 10% of men reported listening to radio at least once a week. Radio listenership was more common in Bangladesh among adolescents, with 22% of boys and 20% of girls reportedly listening to radio at least once a week. In comparison, television viewership was high (Table 12.1). Sixty-four percent of women and 74% of men reported watching television at least once a week. Viewership was also high among adolescents, with 82% of adolescent boys and 76% of adolescent boys reportedly watching television at least once a week.

Phone ownership was also common, with 14% of women and 16% of men reporting that their households had at least three phones. A minority of women's households (2%) and men's households (3%) reported having no cell phones. A breakdown of phone ownership by type of phone (i.e. basic, feature, or smartphone) is shown in Table 12.1.Slightly more than one third of women (37%) and men (36%) reported that women and adolescent girls needed permission to use one of the phones owned in the household. In contrast, 44% of adolescent boys and 55% of adolescent girls reported that such permission was necessary.

Phones were commonly used to make calls (95%, 94%, and 88% of women, men, and adolescents respectively). In contrast, only 22% of women and 29% of men reported using a phone to send SMS. A larger percentage of adolescents (45% of boys and 39% of girls) reported using phones to send SMS. Eighteen percent of women, 24% of men, 35% of adolescent boys, and 22% of adolescent girls reported using a phone to watch short videos. Using phones to access the Internet, use Facebook, or send/receive money transfers were less commonly reported. According to women interviewed, the main user of the phone was one's spouse (41%). In contrast, 74% of men reported that they were the main user of the phone. According to adolescents, 56% of adolescent boys, while only 17% of adolescent girls, reported that they were the main users of a phone.

Ever use of social media was low among women and adolescent girls. Only 7% of women and 15% of adolescent girls reported ever using social media as compared to 19% of men and 34% of adolescent boys. Use of specific social media platforms such as Facebook, WhatsApp, IMO, or YouTube are shown in Table 12.1.

Exposure to messages on PTB

More than one quarter of women reported having heard, seen, or read information about PTB in the past year (26%). Similarly, 24% of adolescent girls reported exposure to PTB information in the past year. Recall of such messages was lower among men (12%) and adolescent boys (10%). Common sources of such information, defined as sources reported by at least three percent of participants, included health workers, family, women's groups, and adolescent groups (Table 12.2).

BOT exposure

Sixteen percent of women and 17% of men reported having seen, heard about, or participated in a BOT activity in the past year. Exposure was similar among adolescents (15%; 13% among adolescent boys, 17% among adolescent girls). Common channels reported by participants, defined as sources reported by at least three percent of participants, included:

- courtyard video sessions,
- health cards,
- counselling of pregnant women at facilities by community skilled birth attendants,
- home counselling by CHWs,
- stickers on lifestyle, infections, nutrition, and contraception (LINC) factors,
- food plates,
- billboards,
- posters,
- Bou shashuti Mala (DIL-MIL mela)
- Theater shows, and
- Courtyard sessions with adolescent groups

Among those not participating in BOT, the most common reason given was that the participants had never heard of BOT (76% of women, 77% of men, 82% of adolescent boys, and 76% of adolescent girls). For women and men, 5% reported that they did not have enough time to participate. For 5% of men, workload was also an important reason why they did not participate in BOT activities.

Common messages recalled by participants related to adolescent nutrition, PTB, child marriage, family planning, general nutrition, and ANC (Table 12.2).

Among all women, 7% of women and 12% of men reported talking about BOT to at least one other person. In comparison, only 6% of adolescent girls and 9% of adolescent boys reported such indirect transfer of BOT messages.

Tables

Table 12.1. Media consumption and phone ownership among women, men, and adolescents in Bangladesh.

	Bangladesh									
	women		men		Adolescent boys		Adolescent girls		Total adolescents	
	n	Col %	n	Col %	n	Col %	n	Col %	n	Col %
Listens to radio at least once a week	43	4.6	47	10.1	102	22.0	91	19.6	193	20.8
Watches TV at least once a week	591	63.8	345	74.0	379	81.7	353	75.9	732	78.8
Number of visits from health worker in past 6 months										
0	679	73.2	319	68.5	389	83.8	424	91.2	813	87.5
1	67	7.2	45	9.7	34	7.3	16	3.4	50	5.4
2	75	8.1	56	12.0	24	5.2	20	4.3	44	4.7
3+	106	11.4	46	9.9	17	3.7	5	1.1	22	2.4
Number of phones in household										
0	18	1.9	15	3.2	13	2.8	7	1.5	20	2.2
1	418	45.1	208	44.6	142	30.6	186	40.0	328	35.3
2	366	39.5	167	35.8	198	42.7	196	42.2	394	42.4
3-9	125	13.5	76	16.3	111	23.9	76	16.3	187	20.1
Number of basic phones										
0	639	68.9	165	35.4	177	38.1	324	69.7	501	53.9
1	197	21.3	203	43.6	176	37.9	101	21.7	277	29.8
2+	91	9.8	98	21.0	111	23.9	40	8.6	151	16.3
Number of feature phones										
0	314	33.9	318	68.2	304	65.5	144	31.0	448	48.2
1	389	42.0	101	21.7	90	19.4	197	42.4	287	30.9
2+	224	24.2	47	10.1	70	15.1	124	26.7	194	20.9
Number of smart phones										
0	683	73.7	321	68.9	261	56.2	321	69.0	582	62.6
1	178	19.2	107	23.0	168	36.2	113	24.3	281	30.2
2+	66	7.1	38	8.2	35	7.5	31	6.7	66	7.1
Women/adolescent girls need permission to use phone	346	37.3	167	35.8	204	44.0	255	54.8	459	49.4
How often use the mobile phone										
No phone	18	1.9	15	3.2	13	2.8	7	1.5	20	2.2
Never	22	2.4	7	1.5	36	7.8	29	6.2	65	7.0
Rarely	67	7.2	2	0.4	27	5.8	67	14.4	94	10.1
Some of the time	276	29.8	47	10.1	86	18.5	237	51.0	323	34.8
Most of the time	85	9.2	189	40.6	148	31.9	40	8.6	188	20.2
All the time/whenever I want it	459	49.5	206	44.2	154	33.2	85	18.3	239	25.7
Use phone to make calls	884	95.4	437	93.8	397	85.6	423	91.0	820	88.3
Use phone to send SMS	201	21.7	135	29.0	209	45.0	180	38.7	389	41.9
Use phone to watch videos	171	18.4	111	23.8	163	35.1	102	21.9	265	28.5
Use phone to access Internet	39	4.2	50	10.7	85	18.3	30	6.5	115	12.4
Use phone to use Facebook	77	8.3	71	15.2	127	27.4	46	9.9	173	18.6
Use phone to send/receive money transfers			73	15.7	51	11.0	9	1.9	60	6.5
Main user of phone										
No phone	18	1.9	15	3.2	13	2.8	7	1.5	20	2.2
Respondent	264	28.5	346	74.2	258	55.6	79	17.0	337	36.3
Spouse	381	41.1	26	5.6						
Respondent and spouse	233	25.1	69	14.8						
Father					154	33.2	278	59.8	432	46.5
Other	31	3.3	10	2.1	39	8.4	101	21.7	140	15.1
Ever used social media	60	6.5	89	19.1	158	34.1	68	14.6	226	24.3
Used Facebook	56	6.0	89	19.1	154	33.2	61	13.1	215	23.1
Used WhatsApp					31	6.7	10	2.2	41	4.4
Used IMO	42	4.5	42	9.0	78	16.8	28	6.0	106	11.4
Used YouTube	37	4.0	69	14.8	120	25.9	37	8.0	157	16.9
Total	927	100.0	466	100.0	464	100.0	465	100.0	929	100.0

Table 12.2. Exposure to messages about PTB and BOT activities reported by women, men, and adolescents in Bangladesh.

	Bangladesh									
	women		men		Adolescent boys		Adolescent girls		Total adolescents	
	n	Col %	n	Col %	n	Col %	n	Col %	n	Col %
Heard/saw/read info about PTB in past year										
No	639	68.9	337	72.3	357	76.9	334	71.8	691	74.4
Yes	245	26.4	54	11.6	45	9.7	110	23.7	155	16.7
Don't know	43	4.6	75	16.1	62	13.4	21	4.5	83	8.9
Heard/saw/read info about PTB from health worker	72	7.8	22	4.7						
Heard/saw/read info about PTB from family	75	8.1			5	1.1	34	7.3	39	4.2
Heard/saw/read info about PTB from women's group	42	4.5								
Heard/saw/read info about PTB from adolescent group					6	1.3	24	5.2	30	3.2
Saw/heard/participated in BOT in past year	146	15.7	77	16.5	60	12.9	78	16.8	138	14.9
BOT exposure: Saw courtyard video sessions	32	3.5			7	1.5	22	4.7	29	3.1
BOT exposure: Saw health cards	189	20.4	24	5.2	7	1.5	54	11.6	61	6.6
BOT Exposure: Counselling of pregnant women at facility by Community Skill Birth Attendants	150	16.2	30	6.4						
BOT Exposure: home counselling by CHW when pregnant	164	17.7	34	7.3						
BOT exposure: Stickers on LINC factors	28	3.0								
BOT exposure: Food plates	171	18.4	23	4.9	14	3.0	65	14.0	79	8.5
BOT exposure: Billboards	157	16.9	30	6.4	15	3.2	62	13.3	77	8.3
BOT exposure: Posters	117	12.6	14	3.0	9	1.9	47	10.1	56	6.0
BOT exposure: Bou shashuti Mala (DIL-MIL mela)	94	10.1	20	4.3	18	3.9	60	12.9	78	8.4
BOT exposure: Theater shows	99	10.7	14	3.0	16	3.4	55	11.8	71	7.6
BOT exposure: courtyard session with adolescent group (flipchart)	29	3.1			4	0.9	32	6.9	36	3.9
BOT exposure: courtyard session with adolescent group (video)	35	3.8			7	1.5	35	7.5	42	4.5
Reason for no BOT: Never heard of BOT	705	76.1	358	76.8	379	81.7	354	76.1	733	78.9
Reason for no BOT: Not enough time	42	4.5	21	4.5						
Reason for no BOT: Workload			21	4.5						
BOT Topic: Adolescent nutrition	37	4.0			8	1.7	43	9.2	51	5.5
BOT Topic: PTB	41	4.4			9	1.9	23	4.9	32	3.4
BOT Topic: Child marriage	68	7.3	24	5.2	34	7.3	55	11.8	89	9.6
BOT Topic: Family planning and delaying pregnancy	31	3.3								
BOT Topic: Nutrition	88	9.5	46	9.9	35	7.5	45	9.7	80	8.6
BOT Topic: ANC	66	7.1	58	12.4	41	8.8	26	5.6	67	7.2
Talked about BOT among all participants	63	6.8	21	4.5	26	5.6	37	8.0	63	6.8
Took action after BOT exposure among all participants	2	0.2	4	0.9	5	1.1	1	0.2	6	0.6
Total	927	100.0	466	100.0	464	100.0	465	100.0	929	100.0

Ethiopia

Media consumption

Table 12.3 shows responses from women, men, and adolescents in Ethiopia regarding media consumption and phone ownership.

Exposure to radio was higher in Ethiopia than Bangladesh. Twenty-three percent of women, and more than 40% of men reported listening to radio at least once a week. Similar to women and men, adolescent boys had higher listenership (59%) than adolescent girls (36%).

Television viewership was less commonly reported than radio listenership (Table 12.3). Twelve percent of women and 20% of men reported watching television at least once a week. Viewership was also lower than listenership among adolescents; 23% of adolescents reported watching television at least once a week (28% of adolescent boys and 19% of adolescent girls).

Phone ownership was also common, with 20% of women and 26% of men reporting that their households had at least two phones. At the same time, nearly 30% of women and 26% of men reported that their households had no phones. Phone ownership was commonly reported by adolescents (38% reporting at least two phones vs. 15% reporting no phones). A breakdown of phone ownership by type of phone (i.e. basic, feature, or smartphone) is shown in Table 12.3.

Approximately half of women (50%) and 45% of men reported that permission was necessary for women and adolescent girls to use one of the phones owned in the household. A larger percentage of adolescents (67% of adolescent boys and 56% of adolescent girls) reported that permission was necessary.

Most participants reported using phones to make calls (57% of women; 66% of men; 89% of adolescent boys; 70% of adolescent girls). In comparison, only 8% of women and 16% of men reported using a phone to send SMS. Phones were used to send SMS by a larger percentage of adolescents (24% of adolescent boys and 23% of adolescent girls). A smaller percentage of women reported using their phones to watch videos (7%) as compared to men (22%). The same trend was true for adolescent girls (25%) as compared to boys (31%). Less than three percent of women reported using phones to access the internet, use Facebook, or send/receive money transfers. A small percentage of men and adolescents also reported using phones for these purposes.

According to women interviewed, the main user of the phone was one's spouse (49%). In contrast, 55% of men reported that they were the main user of the phone. According to adolescent boys, 60% of adolescent boys and only 22% of adolescent girls reported that they were the main users of a phone.

Ever use of social media was low across all participants. Adolescent boys most commonly reported using social media (14%) as compared to adolescent girls (6%), women (3%), and men (7%). Use of specific social media platforms such as Facebook, WhatsApp, IMO, or YouTube are shown in Table 12.3.

Exposure to messages on PTB

Approximately 18% of women reported having heard, seen, or read information about PTB in the past year. In comparison, 21% of men reported exposure to PTB information in the past year. Recall of such messages was lower among adolescents (9%; 8% of adolescent boys and 10% of adolescent girls) as compared to women and men. Common sources of such information, defined as sources reported by at least three percent of participants, included women's groups, health workers, health facility, community members, family, and community meetings (Table 12.4).

BOT exposure

Fifteen percent of women and 14% of men reported having seen, heard about, or participated in a BOT activity in the past year. Exposure was similar among adolescent girls (14%), but low among adolescent boys (0.7%). Common channels reported by participants, defined as sources reported by at least three percent of participants, included men's groups and activities with out of school students.

Among those not participating in BOT, the most common reason given was that the participants had never heard of BOT (76% of women, 84% of men, 96% of adolescent boys, and 78% of adolescent girls).

Common messages recalled by participants related to (Table 12.4):

- Family planning and delaying pregnancy
- Couple communication
- Care-seeking
- Adolescent sexual and reproductive health
- Nutrition
- HIV
- Facility birth
- ANC
- Hygiene
- Alcohol
- Pregnancy
- Child marriage
- Gender
- Workload
- violence

Among all women, 10% of women and 11% of men reported talking about BOT to at least one other person. In comparison, only 4% of adolescent girls and 0.7% of adolescent boys reported such indirect transfer of BOT messages. A similar proportion of participants reported taking action after exposure to BOT (10% of women; 10% of men; 3% of adolescent girls; 0.5% of adolescent boys).

Tables

Table 12.3. Media consumption and phone ownership among women, men, and adolescents in Ethiopia.

	Ethiopia									
	women		men		Adolescent boys		Adolescent girls		Total adolescents	
	n	Col %	n	Col %	n	Col %	n	Col %	n	Col %
Listens to radio at least once a week	192	22.5	176	40.7	250	58.5	160	36.0	410	47.1
Watches TV at least once a week	103	12.0	86	19.9	121	28.3	83	18.7	204	23.4
Number of visits from health worker in past 6 months										
0	296	34.6	99	22.9	166	38.9	206	46.4	372	42.7
1	211	24.7	50	11.6	70	16.4	111	25.0	181	20.8
2	200	23.4	108	25.0	105	24.6	86	19.4	191	21.9
3+	148	17.3	175	40.5	86	20.1	41	9.2	127	14.6
Number of phones in household										
0	248	29.0	113	26.2	46	10.8	86	19.4	132	15.2
1	439	51.3	206	47.7	188	44.0	223	50.2	411	47.2
2-4	168	19.6	113	26.2	193	45.2	135	30.4	328	37.7
At least 1 basic phone	558	65.3	276	63.9	336	78.7	321	72.3	657	75.4
At least 1 feature phone	83	9.7	66	15.3	90	21.1	95	21.4	185	21.2
At least 1 smart phone	36	4.2	31	7.2	26	6.1	25	5.6	51	5.9
Women/adolescent girls need permission to use phone	426	49.8	193	44.7	288	67.4	247	55.6	535	61.4
How often use the mobile phone										
No phone	248	29.0	113	26.2	46	10.8	86	19.4	132	15.2
Never	117	13.7	34	7.9	14	3.3	30	6.8	44	5.1
Rarely	135	15.8	61	14.1	78	18.3	83	18.7	161	18.5
Some of the time	182	21.3	13	3.0	39	9.1	96	21.6	135	15.5
Most of the time	66	7.7	33	7.6	51	11.9	41	9.2	92	10.6
All the time/whenever I want it	107	12.5	178	41.2	199	46.6	108	24.3	307	35.2
Use phone to make calls	485	56.7	285	66.0	378	88.5	311	70.0	689	79.1
Use phone to send SMS	70	8.2	67	15.5	104	24.4	100	22.5	204	23.4
Use phone to watch videos	62	7.3	93	21.5	131	30.7	112	25.2	243	27.9
Use phone to access Internet			23	5.3	43	10.1	9	2.0	52	6.0
Use phone to use Facebook			28	6.5	34	8.0	15	3.4	49	5.6
Use phone to send/receive money transfers			29	6.7	43	10.1	39	8.8	82	9.4
Main user of phone										
No phone	248	29.0	113	26.2	46	10.8	86	19.4	132	15.2
Respondent	44	5.1	238	55.1	257	60.2	97	21.8	354	40.6
Spouse	422	49.4	54	12.5						
Respondent and spouse	59	6.9	2	0.5						
Father					77	18.0	133	30.0	210	24.1
Other	82	9.6	25	5.8	47	11.0	128	28.8	175	20.1
Ever used social media	26	3.0	32	7.4	58	13.6	26	5.9	84	9.6
Used Facebook	26	3.0	32	7.4	57	13.3	24	5.4	81	9.3
Used WhatsApp	1	0.1								
Used IMO	5	0.6	18	4.2						
Used Viber	3	0.4								
Total	855	100.0	432	100.0	427	100.0	444	100.0	871	100.0

Table 12.4. Exposure to messages about PTB and BOT activities reported by women, men, and adolescents in Ethiopia.

	Ethiopia									
	women		men		Adolescent boys		Adolescent girls		Total adolescents	
	n	Col %	n	Col %	n	Col %	n	Col %	n	Col %
Heard/saw/read info about PTB in past year										
No	552	64.6	283	65.5	308	72.1	307	69.1	615	70.6
Yes	150	17.5	91	21.1	34	8.0	44	9.9	78	9.0
Don't know	153	17.9	58	13.4	85	19.9	93	20.9	178	20.4
Heard/saw/read info about PTB from women's group	49	5.7								
Heard/saw/read info about PTB from health worker	53	6.2	22	5.1						
Heard/saw/read info about PTB at health facility	39	4.6								
Heard/saw/read info about PTB from community member	35	4.1								
Heard/saw/read info about PTB from family	27	3.2								
Heard/saw/read info about PTB at community meeting	28	3.3	35	8.1						
Saw/heard/participated in BOT in past year	132	15.4	59	13.7	3	0.7	62	14.0	65	7.5
BOT exposure: Men's group	9	1.1	35	8.1						
BOT exposure: Out of school activity			20	4.6						
Reason for no BOT: Never heard of BOT	647	75.7	361	83.6	408	95.6	344	77.5	752	86.3
BOT Topic: Family planning and delaying pregnancy	51	6.0	13	3.0						
BOT Topic: Couple communication			17	3.9						
BOT Topic: Care-seeking	41	4.8	18	4.2						
BOT Topic: Adolescent sexual and reproductive health			24	5.6						
BOT Topic: Nutrition	53	6.2	23	5.3						
BOT Topic: HIV			13	3.0						
BOT Topic: Facility birth	70	8.2	37	8.6						
BOT Topic: ANC	55	6.4	14	3.2						
BOT Topic: Hygiene	47	5.5	22	5.1						
BOT Topic: Alcohol	30	3.5	13	3.0						
BOT Topic: Pregnancy	41	4.8	17	3.9						
BOT Topic: Child marriage	64	7.5	26	6.0	3	0.7	32	7.2	35	4.0
BOT Topic: Gender			19	4.4						
BOT Topic: Workload	28	3.3	32	7.4	1	0.2	39	8.8	40	4.6
BOT Topic: Violence	34	4.0	20	4.6	0	0.0	42	9.5	42	4.8
Talked about BOT among all participants	87	10.2	49	11.3	3	0.7	18	4.1	21	2.4
Took action after BOT exposure among all participants	89	10.4	42	9.7	2	0.5	12	2.7	14	1.6
Total	855	100.0	432	100.0	427	100.0	444	100.0	871	100.0

Mali

Media consumption

Table 12.5 shows responses from women, men, and adolescents in Mali regarding media consumption and phone ownership.

Radio was commonly listened to by women, men, and adolescents in Mali. Seventy-one percent of women and 85% of men reported listening to radio at least once a week. Adolescent boys had slightly higher radio listenership (78%) than adolescent girls (70%).

Television viewership was also common in Mai (Table 12.5). Fifty-three percent of women and 62% of men reported watching television at least once a week. Similarly, 72% of adolescents (74% of adolescent boys; 70% of adolescent girls) reported watching television at least once a week.

Phone ownership was common, with 40% of women and 46% of men reporting that their households had at least three phones. A minority (5% of women and 4% of men) reported that their households had no phones. Phone ownership was commonly reported by adolescents (68% reporting at least three phones vs. 4% reporting no phones). A breakdown of phone ownership by type of phone (i.e. basic, feature, or smartphone) is shown in Table 12.5.

The majority of participants reported that permission was necessary for women and adolescent girls to use one of the phones owned in the household (60% of women; 59% of men; 65% of adolescent boys; 70% of adolescent girls).

Most participants reported using phones to make calls (86% of women; 97% of men; 77% of adolescent boys; 60% of adolescent girls). In comparison, only 6% of women and 15% of men reported using a phone to send SMS. Phones were used to send SMS by a larger percentage of adolescent boys (13%), but not girls (6%). Using a phone to watch videos was, in contrast, more common. While 26% of women and 20% of men reported using phones to watch videos, 41% of adolescents (40% of adolescent boys; 42% of adolescent girls) reported this purpose of using phones.

According to women interviewed, women themselves were the main user of phones (40%), followed closely by their spouses (34%). In contrast, 72% of men reported that they were the main user of the phone. According to adolescent boys, 49% of adolescent boys and only 32% of adolescent girls reported that they were the main users of a phone.

Ever use of social media was low among women (13%) and adolescent girls (15%). In comparison, nearly 30% of men and 27% of adolescent boys reported using social media. Use of specific social media platforms such as Facebook, WhatsApp, IMO, or YouTube are shown in Table 12.5.

Exposure to messages on PTB

Approximately 52% of women reported having heard the expression *den kokobali wolo* (PTB) in the past year. Sixty-one percent of men reported hearing that phrase in the past year. Recall of the expression was lower among adolescents (42% of adolescent boys and 43% of adolescent girls). In comparison, only 38% of women, 40% of men, and 26% of adolescents

(25% of adolescent boys; 27% of adolescent girls) reported having heard, read, or seen something about PTB in the past year.

Common sources of such information, defined as sources reported by at least three percent of participants, included television, radio, health facilities, health providers, health workers, community leaders, family, and community meetings (Table 12.6).

BOT exposure

Exposure to BOT in Mali was measured based on three questions: recall of BOT's logo, having heard an expression commonly associated with the project, and self-report of seeing, hearing, or participating in a BOT activity in the past year.

Among participants, 32% of women, 30% of men, 23% of adolescent boys, and 26% of adolescent girls reported seeing the BOT logo in the past year. In comparison, a smaller percentage of participants reported having heard the expression commonly associated with the project (21% of women and men; 13% of adolescent boys and 14% of adolescent girls).

Self-reported exposure to BOT activities was still less commonly reported, with 18% of women and 19% of men reported having seen, heard about, or participated in a BOT activity in the past year. Exposure was lower among adolescent girls (12%) and adolescent boys (12%). Common channels reported by participants, defined as sources reported by at least three percent of participants, included men's groups, women's groups, theater, sensitization, and mass events.

Among those not participating in BOT, the most common reason given was that the participants had never heard of BOT (59% of women, 67% of men, 76% of adolescent boys, and 68% of adolescent girls). A small percentage of participants (4% to 6%) reported not having enough time as a barrier to participation. Among women, not knowing where to go (3%) and participation not being customary (8%) were also common reasons given for not participating in BOT activities.

Common messages recalled by participants related to (Table 12.6):

- Nutrition
- ANC
- Pregnancy
- Child marriage
- Malaria prevention

Eleven percent of women and 14% of men reported talking about BOT to at least one other person. In comparison, only 7% of adolescent girls and boys reported such indirect transfer of BOT messages. A similar proportion of participants reported taking action after exposure to BOT (9% of women; 6% of men; 6% of adolescent boys; 4% of adolescent girls).

Tables

Table 12.5. Media consumption and phone ownership among women, men, and adolescents in Mali.

	Mali									
	women		men		Adolescent boys		Adolescent girls		Total adolescents	
	n	Col %	n	Col %	n	Col %	n	Col %	n	Col %
Listens to radio at least once a week	644	71.2	387	85.1	338	77.5	325	69.7	663	73.5
Watches TV at least once a week	483	53.4	281	61.8	321	73.6	326	70.0	647	71.7
Number of visits from health worker in past 6 months										
0	167	18.5	103	22.6	102	23.4	123	26.4	225	24.9
1	98	10.8	43	9.5	65	14.9	60	12.9	125	13.9
2	224	24.8	109	24.0	124	28.4	129	27.7	253	28.0
3+	402	44.5	188	41.3	133	30.5	139	29.8	272	30.2
Don't know	13	1.4	12	2.6	12	2.8	15	3.2	27	3.0
Number of phones in household										
0	48	5.3	16	3.5	19	4.4	21	4.5	40	4.4
1	189	20.9	87	19.1	39	8.9	40	8.6	79	8.8
2	308	34.1	143	31.4	69	15.8	98	21.0	167	18.5
3-20	359	39.7	209	45.9	309	70.9	307	65.9	616	68.3
At least 1 basic phone	535	59.2	291	64.0	274	62.8	277	59.4	551	61.1
At least 1 feature phone	352	38.9	153	33.6	153	35.1	195	41.8	348	38.6
At least 1 smart phone	308	34.1	196	43.2	231	53.0	229	49.1	460	51.0
Women/adolescent girls need permission to use phone	539	59.6	268	58.9	283	64.9	324	69.7	607	67.4
How often use the mobile phone										
No phone	41	4.5	8	1.8	9	2.1	14	3.0	23	2.5
Never	422	46.7	377	82.9	244	56.0	170	36.5	414	45.9
Rarely	142	15.7	6	1.3	61	14.0	130	27.9	191	21.2
Some of the time	166	18.4	15	3.3	77	17.7	100	21.5	177	19.6
Most of the time	132	14.6	49	10.8	45	10.3	52	11.2	97	10.8
Use phone to make calls	775	85.7	442	97.1	334	76.6	278	59.7	612	67.8
Use phone to send SMS	57	6.3	66	14.5	57	13.1	26	5.6	83	9.2
Use phone to watch videos	232	25.7	93	20.4	176	40.4	195	41.8	371	41.1
Use phone to access Internet			26	5.7	25	5.7	9	1.9	34	3.8
Use phone to use Facebook	31	3.4	63	13.9	38	8.7	15	3.2	53	5.9
Use phone to use WhatsApp	78	8.6	107	23.5	67	15.4	43	9.3	110	12.2
Use phone to send/receive money transfers	36	4.0	92	20.2						
Main user of phone										
No phone	41	4.5	8	1.8	9	2.1	14	3.0	23	2.5
Respondent	359	39.7	329	72.3	213	48.9	148	31.8	361	40.0
Spouse	306	33.9	1	0.2						
Respondent and spouse	147	16.3	98	21.5						
Father					104	23.9	145	31.1	249	27.6
Other	51	5.6	19	4.2	110	25.2	159	34.1	269	29.8
Ever used social media	112	12.5	135	29.8	115	26.6	68	14.8	183	20.5
Used WhatsApp	111	12.3	130	28.6	82	18.8	57	12.2	139	15.4
Used YouTube			14	3.1						
Total	904	100.0			436	100.0	466	100.0	902	100.0

Table 12.6. Exposure to messages about PTB and BOT activities reported by women, men, and adolescents in Mali.

	Mali									
	women		men		Adolescent boys		Adolescent girls		Total adolescents	
	n	Col %	n	Col %	n	Col %	n	Col %	n	Col %
Heard the expression *den kokobali wolo* (PTB) in the past year	474	52.4	277	60.9	184	42.2	201	43.10	385	42.70
Heard/saw/read info about PTB in the past year	346	38.3	181	39.8	108	24.8	124	26.6	232	25.7
Heard/saw/read info about PTB on TV	46	5.1	33	7.3	25	5.70	19	4.10	44	4.90
Heard/saw/read info about PTB on radio	206	22.8	150	33.0	83	19.0	60	12.9	143	15.9
Heard/saw/read info about PTB at health facility	119	13.2	49	10.8						
Heard/saw/read info about PTB from health provider	36	4.0								
Heard/saw/read info about PTB from health worker	74	8.2	36	7.9						
Heard/saw/read info about PTB from community leader	45	5.0	17	3.7						
Heard/saw/read info about PTB from family	64	7.1	52	11.4	60	13.8	51	10.9	111	12.3
Heard/saw/read info about PTB at community meeting			18	4.0						
Saw BOT logo in the past year	290	32.1	135	29.7	99	22.7	120	25.8	219	24.3
Heard the expression *Dji tè bon daga tè tchi (l'eau ne se verse pas la calebasse ne se brise pas)* commonly associated with the project in the past year	193	21.3	95	20.9	56	12.8	66	14.2	122	13.5
Heard/saw/participated in a BOT activity in the past year	158	17.5	85	18.7	50	11.5	57	12.2	107	11.9
BOT exposure: Men's group			14	3.1						
BOT exposure: Women's group	62	6.9								
BOT Exposure: Theater			14	3.1						
BOT Exposure: Sensitization			25	5.5						
BOT exposure: Mass event	41	4.5	17	3.7						
Reason for no BOT: Never heard of BOT	537	59.4	304	66.8	330	75.7	317	68.0	647	71.7
Reason for no BOT: Not enough time	44	4.9	29	6.4	16	3.7	19	4.1	35	3.9
Reason for no BOT: Didn't know where	28	3.1								
Reason for no BOT: Not customary	70	7.7								
BOT Topic: Nutrition	64	7.1	40	8.8						
BOT Topic: ANC	50	5.5	20	4.4						
BOT Topic: Pregnancy	49	5.4	34	7.5	17	3.9	16	3.4	33	3.7
BOT Topic: Child marriage	49	5.4	32	7.0	14	3.2	19	4.1	33	3.7
BOT Topic: Malaria prevention			20	4.4						
Talked about BOT among all participants	96	10.6	62	13.6	31	7.1	32	6.9	63	7.0
Took action after BOT exposure among all participants	82	9.10	52	11.4	27	6.2	17	3.6	44	4.9
Total	904	100.0	455	100.0	436	100.0	466	100.0	902	100.0

Chapter Thirteen: Conclusions and recommendations

The risk factors for PTB are complex and cover a vast, multi-level landscape across different health conditions and behaviors (See Chapter 1) (Johns Hopkins Center for Communication Programs, 2020). This study collected evidence ranging from individual-level determinants to health behaviors, health conditions, and household, health system, community and societal factors that were hypothesized to be linked with key risk factors and, ultimately, experience of PTB. In this way, this study took a holistic view of the landscape and was designed to generate evidence useful for future PTB prevention programs as well identify core and contextual risk factors. The BOT study will be invaluable in the design of an evidence based prevention strategy that covers risk factors and – more importantly, tackles household and community level intermediate and distal factors that can, if effectively planned and implemented, reduce the prevalence of PTB.

Across Chapters 4-12, we presented key findings across the focal areas: maternal health, lifestyle, infection, nutrition, contraceptive use, adolescent health, and media exposure. In addition to within- and between-country comparisons across a range of individual, social, and community behaviors, this report includes results from a total of 22 multivariate models drawing on data from three countries. Two models were constructed to examine factors associated with recent experience of a PTB, while an additional two models were fit to examine factors associated with LBW. In addition, 18 models were fit to examine determinants of key risk factors such as maternal healthcare seeking (early ANC in the first trimester, 4+ ANC visits and delivery at a health facility), RTIs/UTIs, maternal nutrition, and contraceptive use. Each of these models was conceptualized and fit for each country independently providing contextual as well as common risk factors. In this concluding chapter, we synthesize results across the three countries for each risk factor examined. This synthesis of results will enable the identification of the core common factors across the three countries as well as unique context-specific determinants. This will be followed by an overall synthesis of results across all models. Recommendations for policy, practice, and research are provided.

We provide a synthesis of findings for each country, beginning with Ethiopia. This is followed by an identification of common determinants of PTB and the risk factors of PTB across the countries (common for at least two out of three countries).

Synthesis of findings across study settings

In this section, we integrate the main findings within each country setting into a diagram that provides empirical guidance to identify the critical cross-cutting factors, particularly those intermediate and distal factors, that influence preventive behaviors and PTB. Each determinant represents a statistically significant component of the analyses presented in this report. Each diagram (Figures 13.1-13.3) can be used to design a holistic PTB prevention strategy.

Each diagram reflects the larger societal context, which includes a backdrop of embedded, intermeshed networks, social influences, and discriminatory gender norms and practices. This larger societal context is depicted by the intersecting lines shown in Figures 13.1-13.3. It is

within this backdrop that risk behaviors of PTB occur in households and communities. The diagram depicts the main determinants of, moving from left to right, family planning use, RTI during last pregnancy, PTB/LBW, early ANC,[22] and nutrition during pregnancy. Relevant proximal, intermediate, and distal factors associated with key health behaviors and PTB are shown as radiating columns moving from the bottom of the figure to the top. Determinants of PTB are shown in the center of the figure. These analyses help us reduce the number large number of risk factors of PTB to a priority set of specific risk or protective factors.

Bangladesh

Figure 13.1 illustrates the synthesis of the multivariate findings presented in this report for Bangladesh.

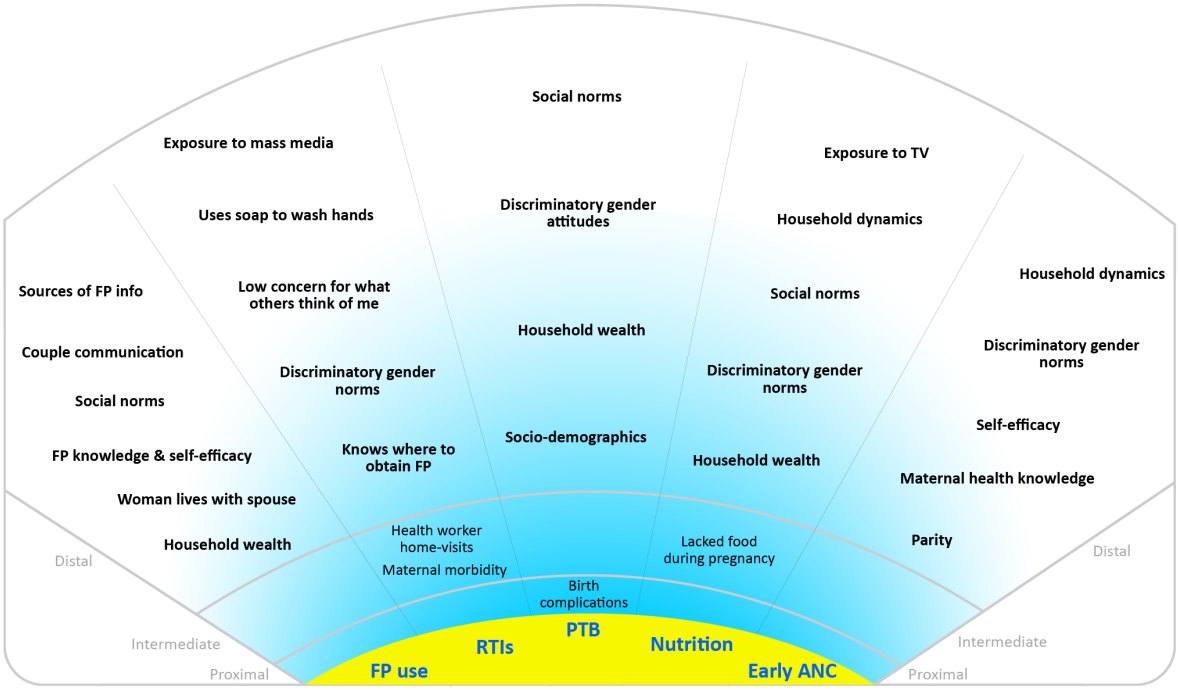

Figure 13.1. Synthesis of Bangladesh findings: PTB model and 4 risk factor models. Determinants of PTB and risk factors are depicted as radiating columns moving from the bottom of the figure to the top. Findings reflect results of multivariate models fit and presented in this report.

The findings for Bangladesh are synthesized into a diagram that depicts five regression models: determinants of PTB and its four risk factors. These risk or protective factors are: Early ANC (< 12 weeks), nutrition (eating less during pregnancy), RTIs/UTIs during pregnancy, and contraceptive use. These findings, presented visually, help us to reduce the number large number of risk factors of PTB to a priority set of specific risk or protective

[22] These diagrams present a selection of models fit and presented in this report. Additional models, such as those that examined determinants of four or more ANC visits or of facility delivery, could be integrated into these diagrams. To help visualize the relationships, we have only included the models of early ANC here to make the diagrams as simple as possible. Early ANC was chosen given its potential role, as evidence suggests, as a behavior that leads to subsequent maternal health behaviors including attending four or more ANC visits and facility delivery.

factors. Key distal, intermediate, and proximal factors emerged as significant across models in Bangladesh.

1. ***Household wealth***: Household wealth was the most common socio-economic factor that emerged as a significant factor associated with key health behaviors and PTB across models. Women with more access to resources were more protected.
2. ***Social norms***: Social norms related to GBV in women's neighborhoods and those around 4+ ANC visits were related to PTB; social norms related to women's experiences of violence and not increasing food intake during pregnancy were related to nutrition; and social norms were linked to FP approval were significantly associated with FP use. The association of social norms across several models indicates the influence of social norms on individual health behaviors and outcomes. These findings point to the central role of social norms in Bangladeshi society and how programs should use normative approaches to motivate people to adopt preventive behaviors. Critical among these findings is the direct effect of the GBV social norm on PTB. This indicates that women living in a cluster where 7+ households out of 10 experience GBV are significantly more likely to experience a PTB than their counterparts. These findings demonstrate how normative violence has become in some neighborhoods. Those clusters or neighborhoods should be identified as part of programs designed to prevent PTB, as they will experience a higher prevalence of preterm births. The social norm around women experiencing violence is also implicated in women eating less during their pregnancy (Figure 13.1). What bounded social norms imply is that the influence of the neighborhood or the cluster that a person is living in, exerts the maximum influence on them (Kincaid, 2004). These findings indicate the need to identify clusters by their normative levels and prioritize those where violence is more prevalent for PTB interventions.
3. ***Discriminatory gender norms***: Interestingly, analyses showed that both discriminatory gender norms (as measured by the GEM scale) and social norms related to violence (measured by asking out of 10 people in your neighborhood, how many experience GBV) linked to several of the PTB risk factors. Like social norms, discriminatory gender norms emerged as significant across models. Women with high or strong support of discriminatory gender norms were more likely to eat less food during pregnancy, not attend an early ANC visit, and be more susceptible to an RTI infection during pregnancy. Two domains of the GEM scale were significantly associated with RTIs and nutrition. The overall synthesis diagram for Bangladesh shows an acute need to support women with greater access to resources, as women who support discriminatory gender norms are less likely to go for essential ANC services in a timely manner (Figure 13.1). Similarly, these norms make women vulnerable to RTI infections during pregnancy.
4. ***Self-efficacy and knowledge***: Self-efficacy refers to the confidence to accomplish a certain task. Self-efficacy was a significant factor in the early ANC and FP use models. Similarly, knowledge of maternal health was also associated with early ANC and FP knowledge was linked to FP use.
5. ***Communication factors:*** Another set of influencing factors included communication between couples, mass media communication, and number of sources of information. Couple communication can be promoted to increase uptake of FP use. Communication between couples about PTB was low in Bangladesh (48% of women and 22% of men reported high communication about it in the last six months), and future prevention programs must emphasize that discussion of PTB at the couple level. Exposure to mass media was an important protective factor for nutrition as was exposure to TV for RTIs. Women who have severe restrictions on mobility are denied

access to health facilities or community clinics (Johns Hopkins Center for Communication Programs, 2020). While health worker home visits were protective for RTIs during pregnancy, the model in Bangladesh has shifted towards women coming to the community clinics. For Bangladesh, a strategy should be developed for women with severe mobility restrictions to build their confidence to take care of themselves, including seeking care as needed, during pregnancy.

6. ***Maternal morbidity***: Women in the Bangladesh sample carried a significant burden of maternal morbidity. They experienced danger signs during pregnancy, chronic conditions, and birth complications. This led to a high burden of comorbidities among women.
7. ***Food insecurity***: Lack of food during pregnancy was the main cause for eating less in pregnancy. Here linkages need to be made with the food security net available in Bangladesh.
8. ***Birth complications***: Birth complications were the main proximal factors associated with PTB in Bangladesh. Women who experienced birth complications were significantly more likely to experience PTBs.

Ethiopia

Figure 13.2 illustrates the synthesis of the multivariate findings presented in this report for Ethiopia.

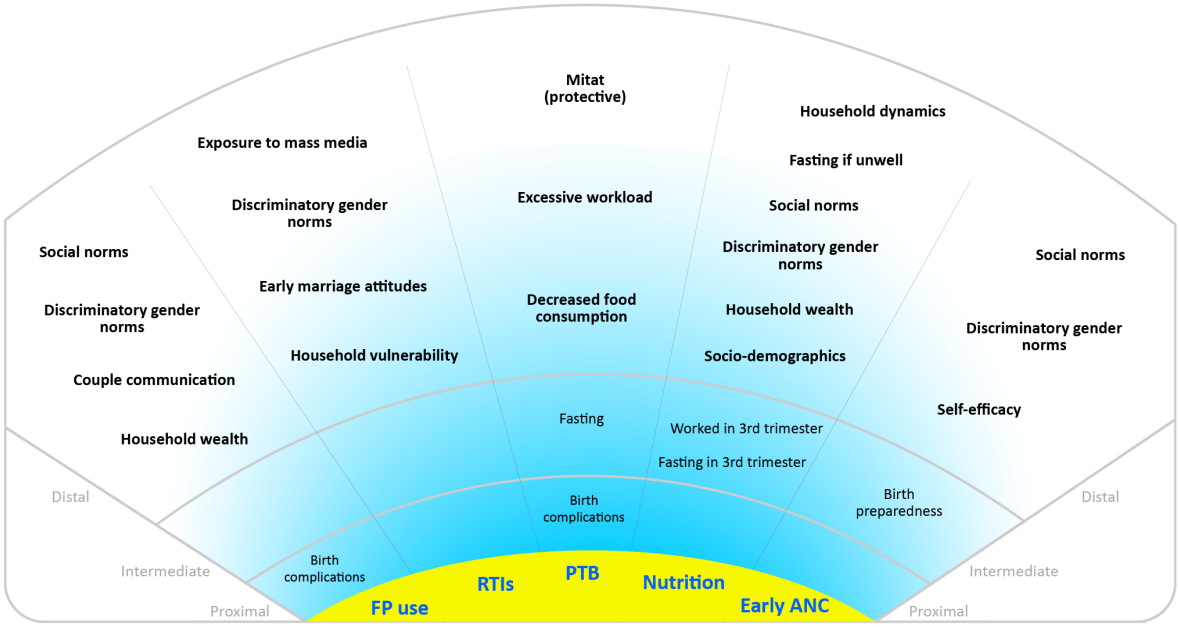

Figure 13.2. Synthesis of Ethiopia findings: PTB model and 4 risk factor models. Determinants of PTB and risk factors are depicted as radiating columns moving from the bottom of the figure to the top. Findings reflect results of multivariate models fit and presented in this report.

These findings, presented visually, help us to reduce the number large number of risk factors of PTB to a priority set of specific risk or protective factors.

1. ***Nutrition***: The main issues emerging from the Ethiopian context can be seen in the PTB model of the diagram. Two nutrition-related factors, fasting and eating less

during pregnancy, have a direct effect on PTB. Nutrition in terms of quantity, quality and fasting needs to be a key focus for PTB prevention.

2. ***Discriminatory gender norms***: The synthesis diagram illustrates discriminatory gender norms are common across four models: early ANC visits, nutrition during pregnancy, RTIs/UTIs during pregnancy, and use of contraceptive methods. If we can convert the specific issues highlighted in the models into an integrated social and behavior change approach (SBC), then a sharper, more focused prevention strategy can be prepared. For example, the early age at marriage scale used in the study to measure discriminatory gender norms related to CEFM measured attitudes among women, men and adolescents in the Amhara region of Ethiopia about CEFM. We now know that early marriage is opted for if the family believes that the adolescent girls is protected from sexual abuse if she marries early, and these attitudes are associated with having an RTI/UTI during the last pregnancy. Discriminatory gender norms are tied to excessive workload for women, including during pregnancy. Excessive workload is specific to the Ethiopian context, where women reported a high workload in pregnancy compared to their counterparts in Bangladesh and Mali. In fact, excessive workload impedes women from completing 4 ANC visits. A much deeper and consistent community effort will be required to address workload. The study also showed that for some women, workload increased during the final trimester.
3. ***Social norms***: The synthesis diagram illustrates that social norms are common across four models: early ANC visits, nutrition during pregnancy, RTIs/UTIs during pregnancy, and use of contraceptive methods. Social norms should be promoted for key preventive behaviors such as early ANC visit or FP use.
4. ***Focus on priority health behaviors such as timing of the first ANC visit:*** Early ANC is a potential gateway behavior that triggers 4-5 behaviors along the maternal health continuum. BOT data indicates similar trends. An SBC strategy to prevent PTB should highlight and promote early ANC care (< 12 weeks) and once that happens, a domino effect of adoption of maternal health behaviors will occur. A holistic campaign implies that from the first ANC visit (< 12 weeks) women are screened for RTIs/UTIs, counselled in the prevention of PTB including on nutrition, couple communication, and danger signs in pregnancy. They also need to be counselled about the possibility of a PTB and what they can do to prevent one. PTB has to be integrated with ANC counseling for each of the four ANC visits. SBC practitioners should prioritize the promotion of pregnant women being screened for RTIs/UTIs during ANC visits.
5. ***Self-efficacy***: Self-efficacy, or confidence in one's ability to practice a particular behavior, is linked to ANC service utilization (specifically models of early ANC and 4 ANC). Efforts to increase women's self-efficacy, or their confidence in their ability to practice behaviors to help them remain healthy during pregnancy, is another area that can be addressed. This could be addressed through an empowerment approach designed to foster women's ability and agency to make their own decisions regarding their health. Furthermore, by promoting couple communication around PTB, women and men will become aware of what actions can be taken to prevent it.
6. ***Birth complications***: Birth complications were strongly associated with PTB (model 1). A good preventive strategy should emphasize a reduction in maternal morbidity or at least ensure that women get adequate health care for the illnesses they experience in pregnancy. Birth preparedness is also a crucial factor in the models, and it should a core component of ANC visits.

7. ***Mitat***: The data indicated that women and men both believed in *Mitat* as a cause of PTB. Knowledge of *Mitat* is shown to have a direct, protective effect on PTB. *Mitat* can be used as a core strategy in the SBC approach with men.

Mali

Figure 13.3 illustrates the synthesis of the multivariate findings presented in this report for Ethiopia.

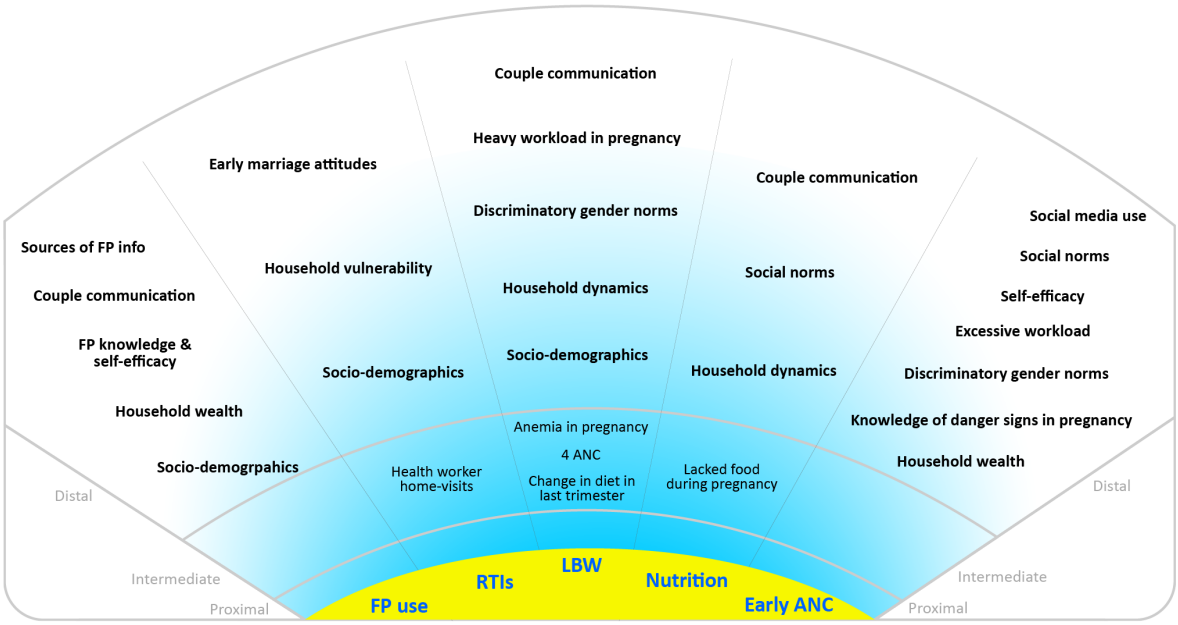

Figure 13.3. Synthesis of Mali findings: LBW model and 4 risk factor models. Determinants of PTB and risk factors are depicted as radiating columns moving from the bottom of the figure to the top. Findings reflect results of multivariate models fit and presented in this report.

These findings, presented visually, help us to reduce the number large number of risk factors of PTB to a priority set of specific risk or protective factors.

1. ***Nutrition***: Multiple nutrition-related factors were related to having given birth to a LBW baby among women in Mali. Anemia, as well as changes in diet in the last trimester, were related to having had a LBW baby. To complement these nutrition-related factors, experiencing food insecurity during pregnancy was significantly related to having reduced food consumption during pregnancy. These factors emphasize the importance of seeing nutrition as not only an individual (e.g. anemia in pregnancy or changes in diet during pregnancy) but also a household issue (e.g. food insecurity) that may require unique, and different, public health interventions.
2. ***Household economic strain***: Household wealth, vulnerability, and tension were associated with family planning use, experiencing an RTI during pregnancy, early ANC, and LBW. These factors demonstrate how, in Mali, a cross-cutting factor influencing key risk factors for PTB as well as LBW is influenced by household economics. SBCC campaigns must be coupled with intentional advocacy at the local, regional, and national levels that address the social determinants of health that have widespread effects on women's and children's health.
3. ***Discriminatory gender norms:*** Greater support for discriminatory gender norms, be they related to sexual relationships, CEFM, or multiple domains (i.e. violence, sexual

relationships, reproductive health, and household responsibilities) were associated with having an RTI during pregnancy and having a LBW baby. Greater support of more discriminatory gender norms was negatively associated with engaging in a protective behavior, namely early ANC. These discriminatory gender norms are, as in other countries, intimately connected with workload for women. In Mali, engaging in heavy workload during pregnancy remained positively associated with having given birth to a LBW baby. As numerous aspects of these discriminatory gender norms were associated with risk factors for PTB and pregnancy outcomes, programs should explore in more depth how to adapt SBCC programs to focus on specific norms that demand attention to prevent PTB.

4. ***Social norms:*** Social norms were significantly associated with both nutrition during pregnancy and early ANC. In Mali, efforts to strengthen social norms related to both food intake during pregnancy as well as early ANC are needed.
5. ***Self-efficacy:*** As in Ethiopia, self-efficacy was a cross-cutting factor associated with FP use and early ANC. Efforts that strengthen women's confidence to practice particular health behaviors and address the larger social and structural barriers that prevent them from practicing those behaviors must be conducted in tandem.
6. ***Couple communication and decision-making:*** Greater couple communication was associated with not only FP use but also food intake during pregnancy. Couple communication was also protective of giving birth to a LBW baby. At the same time, women-led decision-making also remained significantly associated with women not reducing food intake during pregnancy. Future SBCC campaigns must intentionally address couple communication and decision-making, and the existing power dynamics that prevent communication and women's engagement in decision-making, in Mali. High levels of joint or women-led decision-making were less commonly reported for key household decisions by women and men in Mali as compared to participants in Bangladesh and Ethiopia. At the same time, disagreements with one's partner were more common, and gender gaps existed between women and men in feeling like one's opinion was valued in conversations with one's partner. These findings suggest potential pathways through which couple communication and decision-making could be addressed using SBCC.

Prevention of PTB and LBW babies

A comparison of multivariate models of PTB fill a sizable gap in the existing literature on the distal determinants of preterm birth. Below, we compare results from Bangladesh and Ethiopia and highlight opportunities for policy, practice, and research. This chapter highlights the role of social and behavior change approaches as the key prevention science for PTB. It demonstrates how evidence based health behavior change programs can be strategically planned within the community and health system to enable prevention of PTB.

Bangladesh

The Bangladesh PTB model highlights the important role of contextual factors that influence women's lived experiences during pregnancy. Early marriage is driven by the belief that if girls are married early, they will be protected from sexual exploitation. Early marriage is a major issue in Bangladesh, and parents may not realize that by marrying their daughters early, they are increasing the risk of PTB or more severe pregnancy or birth complications. As the data indicate, most adolescents are unaware of the linkage between early marriage and PTB. As a result, prevention programs with women, men, and adolescents need to emphasize the perils of early childbearing for both mother and child. Within the context of ongoing

campaigns to address child marriage in Bangladesh, such as the current UNICEF campaign, there is an important opportunity to integrate PTB prevention messages.

Two social norms were associated with PTB in the Bangladesh model. The first was a protective norm that if the respondent lived in an area where 4 ANC visits were sought by most pregnant women, then women were less likely to have recently experienced a PTB. The second social norm was the bounded descriptive norm around gender-based violence in the community. If a woman lived in a neighborhood where 7 or more women out of 10 experienced violence, then there was an increased likelihood of recently experiencing a PTB. This finding illustrates the direct relationship between community-level discriminatory norms and their consequences and women's experiences of PTB. Increasingly, the literature showing that discriminatory gender norms and practices can influence many health outcomes (ref, ref, ref). Here we show a direct link between the bounded descriptive norm of GBV and PTB.

Ethiopia

Workload during pregnancy was a major issue within the rural Ethiopian context. The Ethiopian women carried the highest workload across the three countries, with the highest mean score of heavy work done during pregnancy as well as the largest percentage working during their third trimester (Table 7.1). In fact, an Ethiopian pregnant woman's workload increases in the final trimester when she has to prepare to receive guests after her baby is born and keep her food supplies ready for her post pregnancy period (Johns Hopkins Center for Communication Programs, 2020). Managing and supporting a rural woman's workload during pregnancy is a challenging task and will need interventions that engage men and boys and work to transform discriminatory gender norms related to workload, particularly workload during pregnancy.

Another risk factor for PTB in Ethiopia was pregnant women eating less during pregnancy than they usually eat. Nutrition, particularly maternal nutrition, is a key component of the mother and unborn baby's health and it is evident in the Ethiopian context that PTB prevention programs have to address specific issues such as how much additional food is consumed by pregnant women especially during the second and third trimesters. These data provide guidelines that social and behavior change (SBC) practitioners can use in the design of tailored PTB prevention campaigns.

A contextual factor related to PBT was women fasting through their pregnancy and consuming a limited diet. All fasting variables were associated with PTB, but fasting while being unwell was most strong associated with PTB. The fasting culture in Amhara is strong and intimately linked with religious practices, and faith-based interventions will be needed to tackle this risk factor. The significance of fasting in multivariate models also illustrates how local contextual factors are important causes of PTB. One of the major outcomes of this research is the identification of local risk factors that can guide local regions to design a need-specific and culturally relevant prevention strategy.

Knowledge of *Mitat* was statistically significantly associated with reduced likelihood of recent PTB experience. This finding teaches us several lessons. First, we need to acknowledge and bring to the surface local knowledge about causes of PTB. *Mitat*, identified in the Part A qualitative component of the BOT study, is a condition that results from exposure to the extreme heat of the sun (Johns Hopkins Center for Communication Programs, 2020). It was also recognized by women, men, and adolescents surveyed for this study.

About 10 percent of the women said they experienced *Mitat* during their most recent pregnancy. As outlined in Chapter 5, these findings are consistent with recent research suggesting linkages between very high temperatures and PTB. *Mitat* can be used as part of a prevention strategy to counsel women who work in the hot midday sun throughout their pregnancy.

Mali

While a model examining factors associated with a recent PTB was not possible with data collected in Mali, a model examining determinants of a LBW baby highlights the importance of household- and community-level factors in women's birth outcomes. Greater support of discriminatory gender norms related to sexual relationships, for example, were shown to be significantly associated with LBW. At the household level, gender dynamics such as couple communication were also associated with LBW; higher couple communication was shown to be protective of LBW. In contrast, women's workload during pregnancy, particularly heavy work in the fields and picking up wood, was associated with an increased likelihood of LBW.

Similar to the PTB model in Ethiopia, adequate maternal nutrition – measured by changes in diet during pregnancy – was protective against LBW. Household dynamics, including household tension and economic stress, were positively associated with LBW, demonstrating the potential role of tension and stress as a mediator of larger structural and social determinants of health.

At the individual level, and similar to findings in Bangladesh and Ethiopia, pregnancy and birth complications remained associated with LBW in Mali.

1. Recommendations for policy

a. The three countries should prioritize preterm prevention in their national maternal and newborn health strategies.
b. PTB prevention efforts need to be integrated with ongoing maternal, reproductive health, and nutrition programs.
c. Expanded access to SRH services for adolescents is essential, especially in contexts where adolescent girls' mobility is restricted and access to SRH resources are limited. Each country can devise its own policy and strategies using some evidence from this report. For example, most of the Bangladesh adolescent girls and boys are in high school, in Mali, girls are primarily out of school and Ethiopia about two thirds adolescents in school.

2. Recommendations for practice

a. Maternal nutrition based on the contextual factors (fasting, eating less in the third trimester, eating less than normal during pregnancy etc.) identified in the study should be prioritized in all three countries.
b. PTB prevention programs should also be part of early marriage campaigns using a multi-sectoral approach. For, example currently Bangladesh has a major early marriage campaign at a national level through UNICEF.
c. Working with adolescents on PTB, particularly in light of their limited knowledge of PTB and the associations between marriage-related factors and PTB, is recommended. Programmatic work with adolescents on sexual and reproductive health offers both immediate opportunities to improve sexual and reproductive health outcomes and medium- to longer-term opportunities to prevent poor maternal and neonatal health outcomes, including PTB.

d. Gender-based violence, including violence at the community, has a direct association with PTB. Efforts are urgently needed to address GBV within health programs, not just among pregnant women, but in the community more broadly. Women can be screened for GBV when they come for their ANC check-ups.

3. Recommendations for research

This study has demonstrated a simple analytical method of identifying contextual risk factors that can guide the SBC practitioner to designing need and context specific interventions. The behavioral analytical approach of running 22 models distils the number of risk factors from 20-30 to about 5-6 per model. It provides an opportunity for planners and practitioners to design evidence based programs for the prevention of PTB.

a. This study can be replicated to identify contextual and local risk factors of PTB.
b. Further research is required to fully understand the role of distal factors in PTB prevention.
c. Stronger study designs are required to take this research forward. Stronger research designs such as cluster randomized control trials can be used to assess the impact of PTB prevention programs on preventive health behaviors in the short term and, ultimately, PTB in the long term.
d. Improved measurement of PTB is necessary for community-based studies.

Maternal health

We ran three models for maternal health: 1) early ANC visit (< 12 weeks), 2) 4+ ANC visits, and 3) hospital delivery. We present the common determinants for all three models.

Early ANC visits

The first ANC visit should happen in the first trimester, but often women do not go for their first check up before the 4th or 5th month. Early ANC visits can trigger subsequent behaviors on the maternal health continuum, including the total number of ANC visits, birth preparedness actions, and place of delivery. Figure 13.4 shows that discriminatory gender norms were a common risk factor in all three models of early ANC visits. These discriminatory gender norms form the basis for how decisions about ANC care, workload, place of delivery, among other topics. are made. Evident, however, is that the particular pathways through which discriminatory gender norms influence household environments, power dynamics, and individual behaviors operate differently in each country. For example, in Bangladesh mobility restrictions and maintaining women's honor emerge as key discriminatory gender norms that influence women's healthcare seeking. Women's workload is highest in Ethiopia, where pregnancy provides no respite for most rural women. And in Mali, it is household tension and unequal power dynamics that contribute to ongoing gender inequities and discrimination.

Self-efficacy is also a common determinant for the three models. Self-efficacy related to key behaviors should be actively promoted if more women are to visit the health center within the first three months of their pregnancy. And with self-efficacy, women have the confidence to make their own decisions.

All three countries have shown the importance of social norms. If a strong social norm around early ANC visits is created, then more women will seek their first ANC check-up within 12 weeks of pregnancy. In Mali, women who reported a heavy workload were less likely to report an early ANC visit. Women's workload in pregnancy and pre-pregnancy is, therefore, tied to how successful PTB prevention programs can be.

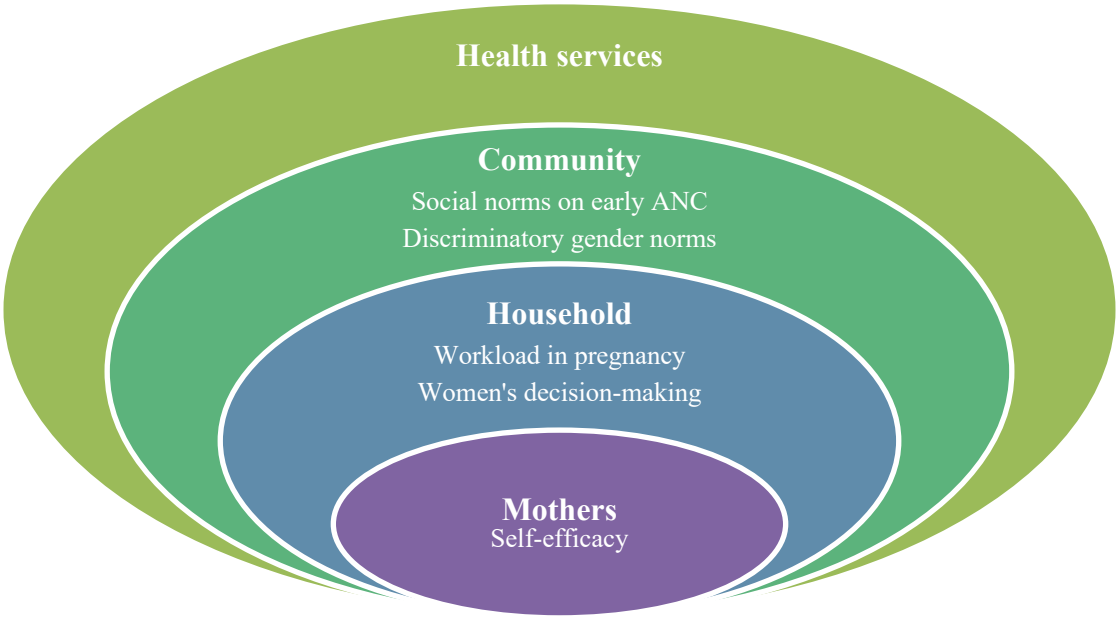

Figure 13.4. Common determinants of early ANC visit (< 12 weeks) among women (15-49) in Bangladesh, Ethiopia, and Mali.

Number of ANC visits

Heavy workload during pregnancy deterred women across all three countries from having 4 ANC visits. Early ANC had a significant association with 4+ ANC visits, supporting its potential role as a gateway behavior for several subsequent behaviors along the maternal health continuum. Self-efficacy for 4 ANC visits also emerged as a common factor associated with women completing at least 4 ANC check-ups. Social norms around 4 ANC visits were also associated with 4 ANC check-ups.

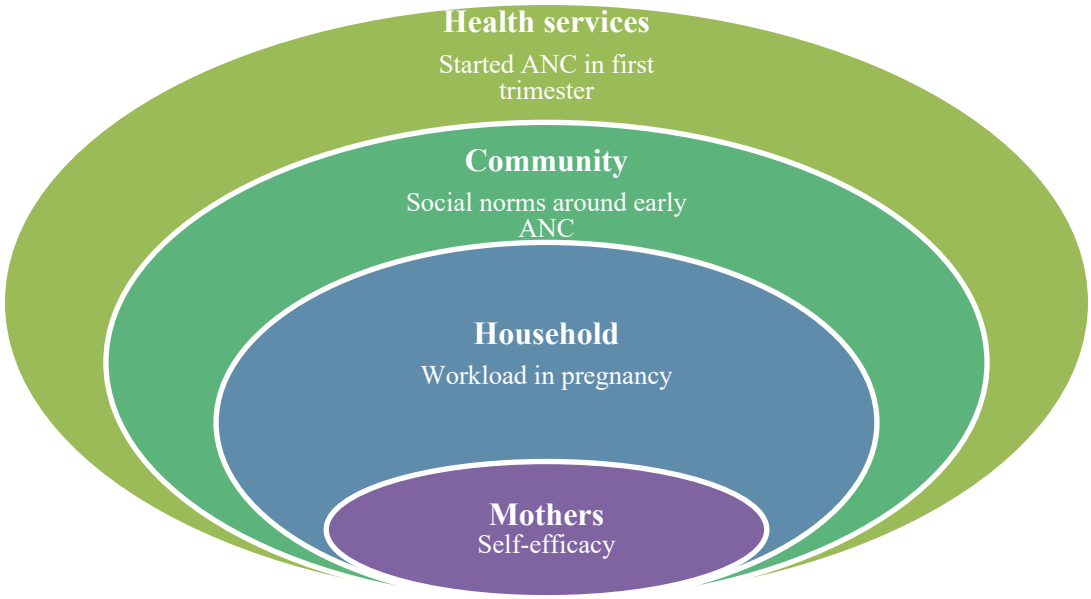

Figure 13.5. Common determinants of 4+ ANC visits among women (15-49) in Bangladesh, Ethiopia, and Mali

Place of delivery

The determinants of hospital deliveries were wealth, birth preparedness, attending 4 ANC check-ups, self-efficacy, and discriminatory gender norms. These factors are consistent with determinants of other maternal health behaviors.

4. Recommendations for policy

a. Full implementation of existing policies on early ANC visits should be prioritized within each country's maternal health guidelines.
b. Early ANC visits appear to be a key gateway behavior that can trigger subsequent behaviors. As a result, this behavior is ideally suited as a central behavior for a larger prevention campaign working to address risk factors and PTB.
c. Women's workload has to be recognized at the community level by local leaders as it is adversely affecting their health and is preventing them from accessing maternal health services. This will require focused advocacy work, perhaps using a SMART advocacy approach, as well as focused SBCC approaches.

5. Recommendations for practice

a. Complement the implementation of policies on early ANC by promoting early ANC visits using innovative SBCC approaches. Once the women enter the health system, they tend to go back and complete their 4 ANC visits.
b. A comprehensive preconception care program, where women receive counselling on early ANC prior to conception, could be one novel interpersonal approach to encourage early ANC visits.
c. Information related to PTB should be integrated into all ANC guidelines.
d. Given the relationship between birth preparedness and facility delivery, innovative SBCC approaches designed to improve birth preparedness – coupled with strategies informed by behavioral economics that make it easier to save money as well as efforts to address household power dynamics – are urgently needed. This study identified important intersections between birth preparedness and women's roles in household decision-making. In Bangladesh, for example, a minority of women reported earning money themselves, while more than 60% reported that they were able to set aside money for emergencies. These findings, which demand further investigation, illustrate a clear way through which programmatic attention to couple communication and household decision-making can have direct effects on maternal health behaviors like birth preparedness and, ultimately, delivery in a health facility.
e. Programs that foster male engagement in ANC as well as work to transform discriminatory gender norms related to household responsibilities in the long term are necessary to reduce the workload women have, particularly during pregnancy, that influences maternal health behaviors/outcomes. One approach could be the integration of explicit, cross-cutting messages on women's workload in larger SBCC strategies designed to promote early ANC or other maternal health behaviors.
f. Community norms for women's workload during pregnancy should be set through a community engagement program with local and informal leaders.

6. Recommendations for research

a. The study used local, culturally relevant scales in two countries. These were ratio level scales that assisted in improving measurement of constructs such as social norms, gender norms, or couple communication. More research is required to further

the development of these ratio level scales, including an analysis of the scales' psychometric properties.

b. Interventions that integrate PTB into maternal health programs should be evaluated to identify best practices.

Reproductive/Urinary tract infections during pregnancy

The self-reported symptoms of RTIs/UTIs during pregnancy were high in all three countries. Almost half the respondents from Bangladesh reported at least two RTI/UTI symptoms during their most recent pregnancy. In Ethiopia the prevalence of RTI/UTIs was even higher: two thirds of women stated they suffered from RTI/UTI symptoms during their most recent pregnancy. Finally, in Mali about 72% women reported RTI/UTI symptoms during their last pregnancy. Having so many pregnant women endure RTI/UTI symptoms alongside other morbidities leads to important questions related to the management, treatment, and prevention of RTIs/UTIs.

Figure 13.6 shows the determinants of RTI/UTI during pregnancy common to at least two of the three countries. Figure 13.6 shows that discriminatory gender norms play an important role in women's ability to manage, treat, and prevent RTIs/UTIs. In Bangladesh, women have severe mobility restrictions which compromise their ability to seek adequate health care (Johns Hopkins Center for Communication Programs, 2020). In Ethiopia, it is women's excessive workload, especially during pregnancy, that prevents women from seeking care (Johns Hopkins Center for Communication Programs, 2020). In Mali, women feel the enormous strain of economic stress and household work (Johns Hopkins Center for Communication Programs, 2020). Each of these have a gender dimension that adversely affects women's ability to manage their health during pregnancy.

Women who felt that early marriage would protect them from sexual violence were more likely to have RTI/UTI symptoms during pregnancy. In Ethiopia, women who thought that early marriage could resolve financial problems were more likely to have RTI/UTI symptoms during pregnancy. Ample evidence exists on the relationship between early marriage and PTB. These findings suggest that RTI/UTI may play a mediating role in this relationship.

The wealth index and vulnerability index are indicative of the economic status of the women in the sample. Consistently marginalized women were more prone to RTI/UTI symptoms and prevention programs are urgently needed to reach these individuals.

The study showed that between 32 to 77 percent of women sampled for the study across three countries suffered from at least one more illness in addition to the self-reported RTI/UTI symptoms during pregnancy. Women have to manage comorbidities during their pregnancies in addition to all other household and child rearing work. Finally, birth complications were associated with RTI/UTI symptoms during pregnancy, indicating that maternal morbidity across the three study sites remains high. Further exploration of the interconnections between birth complications and RTI/UTI symptoms during pregnancy is urgently needed.

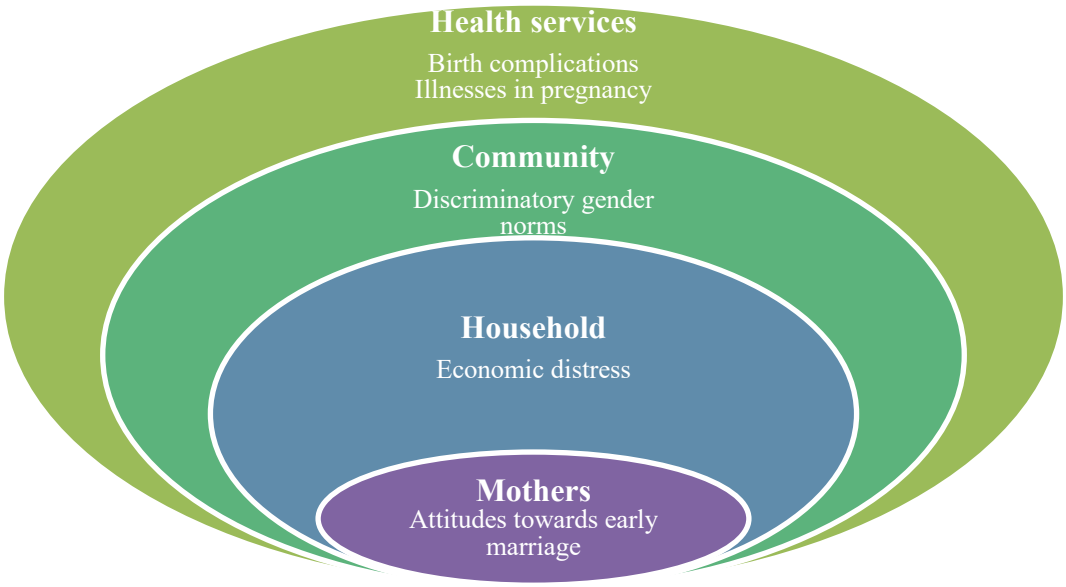

Figure 13.6. Determinants of RTIs/UTIs during pregnancy among women (15-49) in Bangladesh, Ethiopia, and Mali

7. Recommendations for policy

a. Holistic prevention PTB programs that also focus on RTI/UTI prevention are required as the morbidity load of RTI/UTIs in pregnant women is enormous in all three countries.
b. RTI/UTI screening of pregnant women must become an essential component of ANC care. although the WHO ANC guide includes RTI/UTI screening, maternal health guidelines must be reviewed at the country level. An assessment of the implementation gaps is urgently needed to inform health system strengthening activities .
c. Tackling discriminatory gender norms should become an integral part of the RTI/UTI national guidelines in all three countries.

8. Recommendations for practice

a. RTI/UTI prevention efforts should be integrated with reproductive, maternal, prevention of early marriage, and nutrition programs.
b. RTI/UTI prevention should be an essential part of the health system. Health center staff and field workers must be trained in counselling on identifying RTI/UTI symptoms during pregnancy as well as on the prevention of PTB.
c. Innovative SBCC approaches that draw on the media channels most relevant to each country context can be used to address the linkages between RTI/UTI and PTB. Digital content on RTI/UTI and PTB could, for example, be loaded on smart and regular phones, to increase availability of content in health centers and with field workers.

9. Recommendations for research

a. The evidence building process on prevention of RTI/UTIs during pregnancy should continue with stronger study designs that address issues of recall bias.
b. Measurement of RTIs/UTIs, particularly during pregnancy, in community-based surveys using self-report demands further refinement and testing.

Food consumption during pregnancy

Emergent across models examining determinants of PTB and LBW was the effect of dietary practices during pregnancy. In particular, women who had consumed less food during their most recent pregnancy as compared to a typical day pre-pregnancy had an increased likelihood of experiencing a PTB or giving birth to a LBW baby. To examine this determinant in more depth, three models were constructed to examine factors associated with food consumption during pregnancy. Figure 13.7 shows common factors across settings shown to be associated with reduced food consumption during pregnancy as compared to pre-pregnancy.

Across settings, household wealth – or household vulnerability – were consistently associated with likelihood of reporting reduced food consumption during pregnancy as compared to pre-pregnancy. Interestingly, across settings those from households of higher wealth had increased likelihood of reporting reduced food consumption; in contrast, those reporting greatly household vulnerability also were more likely to report reduced consumption of food during pregnancy as compared to pre-pregnancy. Experiencing a lack of food during pregnancy was a consistent factor associated with reduced food consumption during pregnancy, demonstrating the important role of economic factors in maternal nutrition and health outcomes (Figure 13.7).

Social norms related to food consumption during pregnancy suggested that community-level practices related to nutrition during pregnancy were associated with women's individual behaviors.

Greater support of discriminatory gender norms was shown across settings to be positively associated with reduced food consumption during pregnancy (as compared to pre-pregnancy). At the household level, more equitable power dynamics, as measured by couple communication, was a protective factor for maternal nutrition. However, associations emerging with household decision-making about cooking, buying food, or about numerous topics varied across settings. Workload showed that those who reported more work during pregnancy than a typical day pre-pregnancy did not reduce their food consumption during pregnancy, suggesting that workload may lead women to continue to eat (either at the same level or more) during pregnancy. Further investigation of these dynamics is needed to understand the pathways through which discriminatory gender norms influence power dynamics at the household level and ultimately influence dietary practices during pregnancy.

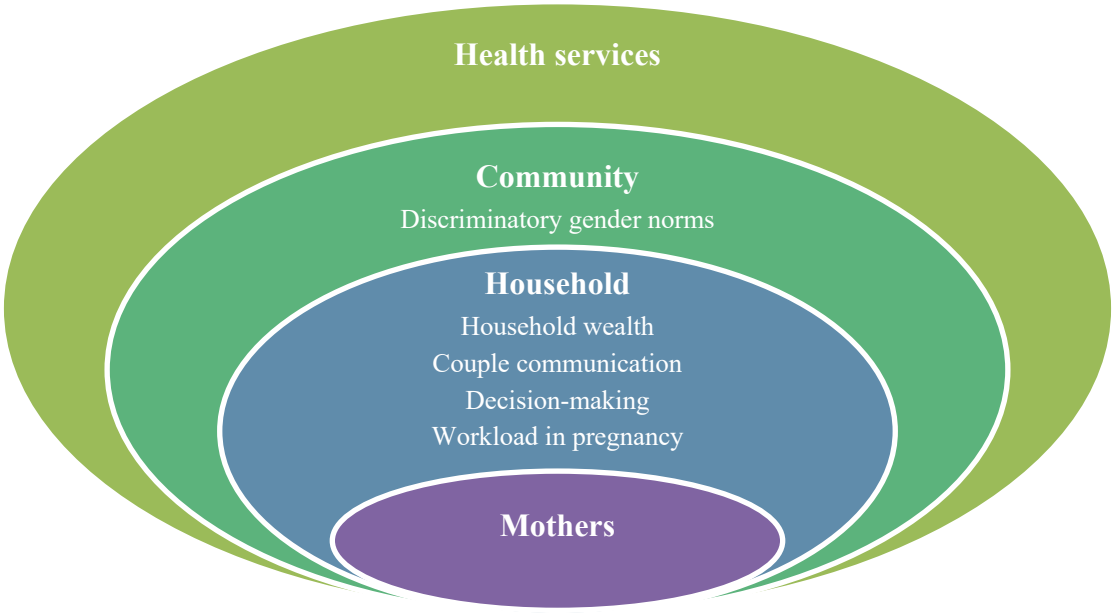

Figure 13.7. Determinants of reduced food consumption during pregnancy as compared to pre-pregnancy among women (15-49) in Bangladesh, Ethiopia, and Mali

10. Recommendations for policy

a. Clear guidelines or recommendations for maternal dietary practices and nutrition are needed at the community level.
b. Attention to the structural factors that lead to household vulnerability and to women lacking food during pregnancy must be addressed through structural or policy interventions.

11. Recommendations for practice

a. Nutrition programs should focus on dietary quantity, dietary quality, and improving pre-pregnancy dietary practices during pregnancy.
b. PTB and LBW should be identified as important risks associated with poor maternal nutrition.
c. SBC practitioners can promote more equitable couple communication to ensure sufficient maternal nutrition.
d. Attention to the structural factors that lead to household vulnerability and to women lacking food during pregnancy must be addressed through community-based programming.

12.Recommendations for research

a. Further research is required to understand the context-specific pathways linking discriminatory gender norms, couple communication, decision-making, and maternal nutrition .
b. Further quantitative and qualitative research is needed to understand the positive associations between household wealth and reducing food consumption during pregnancy (as compared to pre-pregnancy). An intersectional lens (Crenshaw, 1991; Hankivsky et al., 2010; Sen, Iyer, & Mukherjee, 2009), that acknowledges the complex ways in which inequality and oppression can intersect across gender, wealth, ethnicity, and other aspects of people's lived realities could be useful in helping to understand how discriminatory gender norms may affect women's lives in unique, complex ways based on household wealth.

Family Planning

The main role of contraceptive use in the prevention of PTB is to ensure adequate birth intervals. The determinants of current use of a contraceptive method included household wealth, with more marginalized households unable to access FP services routinely.

Couple communication was one of the strongest determinants of contraceptive use across all three countries. Prevention programs can work to address couple-level power dynamics by focusing on couple communication. In addition, it is necessary to boost self-efficacy for family planning if contraceptive use is to be sustained. Bangladesh has a strong family planning program into which PTB can be easily integrated. Ethiopia and Mali can also do the same.

Social norms around the approval of family planning is an integral step in the adoption of FP methods. Approval of neighbors and family is required if couples start using FP. Another important determinant of contraceptive use across settings was the number of sources of information on FP a respondent had. Multiple sources of information were positively associated with current use of a contraceptive method.

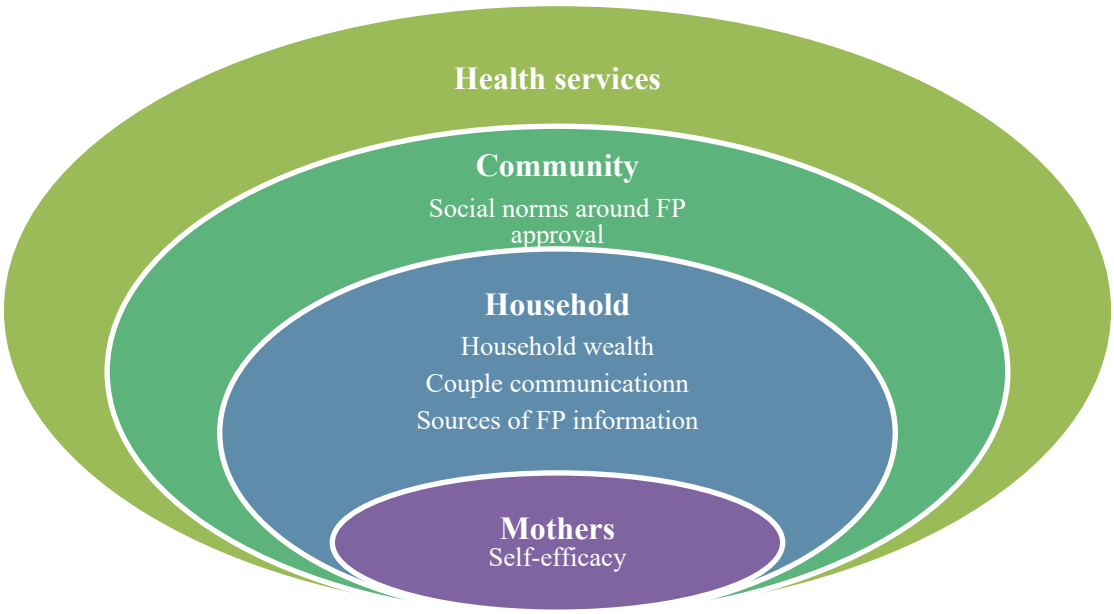

Figure 13.8. Determinants of family planning use in women (15-49) in Bangladesh, Ethiopia & Mali

13.Recommendations for policy

a. National family planning programs should integrate prevention of PTB at all levels. Family planning could be integrated into a comprehensive preconception care strategy, where awareness about the benefits of using FP, including prevention of PTB, be emphasized.

14. Recommendations for practice

a. Family planning programs should actively promote spacing between two children in the context of preventing a PTB. As part of this approach, PTB should be recognized as an undesirable outcome if birth spacing is not maintained.
b. Couple communication needs to be actively promoted on PTB and FP.

c. Use of innovative SBCC channels, including digital devices, can reinvigorate existing FP programs and offer new ways to integrate FP and PTB-related information.
d. Counseling on side effects of contraceptives needs to be regularly implemented as part of the FP programs in the 3 countries.

15. Recommendations for research

a. Further research is required to measure the impact of PTB prevention programs on contraceptive practices in the short term and, in the long term, the protective effect on PTB.

Study strengths and limitations

The study has several strengths and limitations. Using a multi-staged sampling design, the study was able to collect data from a representative, community-based sample of women, men, and unmarried adolescents across three settings. These findings may, therefore, be generalizable to similar communities in the regions of Bangladesh, Ethiopia, and Mali where the study was conducted. The collection of data from women, men, and adolescents enabled a more complex, complete picture of the intermediate and distal factors related to PTB in these settings. Quantitative information on intermediate and distal factors related to the prevention of PTB enabled us to examine trends across study settings and participant types.

This study strengthens the existing evidence base on the prevention of PTB. To do so, we relied on cross-sectional, community-based studies in three countries to examine the role of intermediate and distal factors in the prevention of PTB. As a result, we are unable to draw causal claims as we cannot establish temporal ordering of associations presented here. More rigorous study designs are urgently needed to not only examine these associations longitudinally, but also to evaluate the potential effects of SBCC campaigns such as BOT on preventive behaviors and, ultimately, PTB and infant mortality.

Finally, as part of this community-based study, we relied on women's self reports of their most recent pregnancy experiences and PTB. While self-reports are commonly used in public health to measure health indicators, PTB is nuanced – and perceptions and recall bias can significantly affect what births are defined as preterm, and what births are not. These findings are a first step in identifying how best to measure self-report of PTB. Future studies should build on these to improve measurement of PTB at the community level. A simple discharge card for children stating their birthweight and the number of weeks at delivery could be a first step in improving measurement of PTB.

Conclusion

The BOT study explored intermediate and distal factors with the principal goal of informing much needed evidence-based PTB prevention initiatives. The findings from this study indicate that the PTB field needs to prioritize prevention programs to reduce PTB rates globally. By addressing the upstream, distal factors that influence risk factors for PTB, we have the unique opportunity to integrate PTB prevention efforts with ongoing, evidence-based maternal health, family planning, reproductive health, and nutrition programs.

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